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ABSTRACT

A project of the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/SMEAC) has focused on the synthesis of information dealing with its specific areas of concern. Recent developments in the science and social studies educational communities have led to an increasing emphasis on the educational implications of the interactions among science, technology, and society, with particular emphasis in their interdisciplinary character. This report identifies some of the overlap between these concerns and those of the environmental education community. It is a result of a national survey carried out by ERIC/SMEAC in 1986 designed to identify and characterize the overlaps of science, technology, society, and environment within the elementary and secondary school programs at both the state and local levels. Included in this volume are the responses to a questionnaire addressing this topic which was sent to representatives of all state agencies, along with an overall summary which attempts to provide a national synthesis. The individual responses from 40 states and the District of Columbia are included, as well as copies of the survey form and cover letter. (TW)

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COMPILED AND SUMMARIZED BY

JOHN F. DISINGER

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CURRENT PRACTICES IN SCIENCE/SOCIETY/TECHNOLOGY/ENVIRONMENT EDUCATION: A SURVEY OF THE STATE EDUCATION AGENCIES

ERIC® Clearinghouse for Science, Mathematics
and Environmental Education
The Ohio State University
College of Education and
School of Natural Resources
1200 Chambers Road, Third Floor
Columbus, Ohio 43212

December 1986

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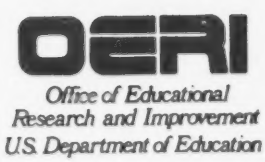
ENVIRONMENTAL EDUCATION INFORMATION REPORTS

Environmental Education Information Reports are issued to analyze and summarize information related to the teaching and learning of environmental education. It is hoped that these reports will provide information for personnel involved in development, ideas for teachers, and indications of trends in environmental education.

Assistance in conducting this survey and preparing this report were received from: Robert W. Howe, Director, ERIC/SMEAC; Louis A. Iozzi, former President, State Environmental Education Coordinators Association; David A. Kennedy, President-Elect, Council of State Science Supervisors; Marylin Lisowski, Research Associate, ERIC/SMEAC; Peter A. Rubba, Director, Center for Education in Science, Technology and Society, The Pennsylvania State University; and Terry L. Wilson, Research Associate, ERIC/SMEAC. The Board of Directors of the North American Association for Environmental Education endorsed the concept of the study and provided suggestions for its implementation.

Your comments and suggestions for these publications are invited.

John F. Disinger
Associate Director
Environmental Education



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PREFACE

Since 1971, the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/SMEAC) has been involved in monitoring the progress of environmental education efforts in the United States, and to some extent around the world, by identifying, collecting, indexing, abstracting, and disseminating documents of particular interest to those involved and/or interested in it. Many mechanisms have been employed in carrying out this mission; one of the most fruitful has been through securing the cooperation and input of those individuals in key positions in the state education agencies, with respect to both activities within the agencies and identification of more localized pertinent activities. In many cases, the state education agencies and school districts or other instrumentalities within the states are on the cutting edge of change, development, and improvement in environmental education, as in other educational pursuits.

An associated activity of ERIC/SMEAC has focused on the synthesis of information dealing with its specific areas of concern--science, mathematics, and environmental education. In the latter area, a series of "Environmental Education Information Reports" has been developed, along with shorter Information Bulletins and Digests. Some ERIC/SMEAC synthesis efforts have been reported in the journal literature, while others have been disseminated solely through the ERIC system or through Information Reports, Bulletins, and Digests. Among those reports developed in cooperation with representatives of the state education agencies have been five Directories of Projects and Programs in Environmental Education published between 1972 and 1979, a State-by-State Report in 1975, and a journal paper summarizing the status of state-level activity in environmental education as of 1982. Bibliographic information concerning these is provided below.

Recent developments in the science and social studies educational communities have led to increasing emphasis on the educational implications of the interactions among science, technology, and society, with particular interest in their interdisciplinary character. As this Information Report notes, there is much overlap between these concerns and those of the environmental education community. Thus, a direct exploration of levels of implementation of Science/Society/Technology/Education, with emphasis on its relationships to and interactions with environmental aspects, has been identified as a priority interest of this Clearinghouse. In preparing this report, the cooperation of representatives of the state education agencies was sought, and gained, in attempting to identify and characterize the overlaps of science, society, technology, and environment within the elementary and secondary school educational enterprise at the state and local levels, primarily in terms of practice. Included in this volume are

the responses to a questionnaire addressing this topic which was mailed to representatives of the state education agencies, with an overall summary which attempts to provide a national synthesis.

Robert W. Howe, Director
ERIC Clearinghouse for Science, Mathematics,
and Environmental Education

December 1986

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South Carolina
West Virginia

CURRENT PRACTICES IN SCIENCE/SOCIETY/TECHNOLOGY/ENVIRONMENT EDUCATION: A SUMMARY OF SURVEY RESPONSES

by John F. Disinger

During the past decade, leaders in the science and social studies education communities have proposed and promoted an emphasis on Science/Technology/Society (S/T/S) Education, following the rationale that understanding of the interactions of science and society is of central importance to citizens individually and collectively, and that schooling can and should, perhaps must, address this concern squarely (National Commission on Excellence in Education, 1983). A particularly prominent feature of the science-society interface is the accelerating development and use of new, often exquisite, technologies, which are seen to exacerbate the problems of human society. Generally, three interactive causes of the science-society dilemma are identified: the increase in world population and accumulation of population in urban areas; an increase in levels of affluence; and the unmanaged upsurge of technology, which has been the agent for producing affluence and urbanization (King, 1972).

S/T/S and Science Education

The inclusion of S/T/S philosophies in science education programs has been endorsed by many people during the past decade. The findings of Project Synthesis (Harms, 1981) were an outgrowth of three major studies funded by the National Science Foundation during the late 1970s, reported respectively by Helgeson, et al. (1977), Weiss (1978), and Stake and Easley (1978). Project Synthesis provides a model for the science education programs of the future; S/T/S is a key element of that model. Analysis of the reports also emphasizes that most current school science programs do not approach the stated goal clusters of Project Synthesis, which are:

> Personal Needs: Science education should prepare individuals to utilize science for improving their own lives and for coping with an increasingly technological world;
>
> Societal Needs: Science education should produce informed citizens prepared to deal responsibly with science-related societal issues;
>
> Academic preparation: Science education should allow students who are likely to pursue science academically as well as professionally to acquire the academic knowledge appropriate for their needs;
>
> Career education/awareness: Science education should give all students an awareness of the nature and scope of a wide variety of science and technology-related careers open to students of varying aptitudes and interests (Kahl and Harms, 1981, pp. 7-8).

The Project Synthesis staff concluded that only those goals related to academic preparation were receiving significant emphasis in existing science education. In response, Harms (1981, p. 119) recommended that:

> "The goals of preparing the majority of students to use science in their everyday lives, to participate intelligently in group

decisions regarding critical science-related societal issues and to make informed decisions about potential careers in science and technology are equally as important as the goal of preparing a minority of students for more advanced coursework in science."

The National Science Teachers Association (NSTA) has recognized the trend toward viewing science as a discipline appropriately concerned with the study of the interactions and mutual impacts of science and society (NSTA, 1978). As an emerging conceptual model for science education, S/T/S has been identified as a potentially effective response to recent calls for educational reform such as those noted above (Hurd, 1984; Bybee, 1985).

S/T/S and Social Studies Education

From the perspective of the social studies education community, Patrick and Remy (1985, p. 2) have noted:

> "Decisions about science/technology/society issues often require 'tradeoffs' between conflicting values in which there is no clear view of right and wrong. Many environmental issues, for instance, force citizens to choose either clean air or water or production and jobs. Most people agree that pollution by factories is bad; they also tend to agree that unemployment and a big drop in factory output are bad. At times, the problem has been to decide how to limit pollution enough to protect health and environment while still maintaining production and jobs. Making a decision in a conflict between economic and ecological values requires careful consideration of alternative factual and ethical claims. The eventual choice may result from a compromise between conflicting positions and values."

Social studies educators generally frame their rationales for S/T/S education within the purview of citizenship education. For example, Remy (1976, p. 360) identified four elements of decision making by citizens that are intrinsic to S/T/S issues:

- confrontation with the need for choice;
- identification of values and goals that pertain to the occasion for decision;
- identification of alternative responses to the occasion for decision; and
- prediction of the positive and/or negative consequences of alternatives in terms of values and goals.

In discussion of the above, Patrick and Remy (1985, pp. 49-50) note that facts are involved in the identification of alternative courses of action, that decision making about S/T/S issues generally involves uncertainty about the likely social or environmental consequences of alternative courses of action, and that risk is involved because of uncertainty. Uncertainty leads to the necessity of assigning probabilities to the likelihood of particular consequences for a given alternative, and in fact

for all alternatives. Thus, the need for integrated study of all possible factors is supported.

S/T/S and Environmental Education

The term "environmental education" means many things to many people, including those who profess to be "environmental educators." This multiplicity of meanings is at least in part an outgrowth of the relative newness of the term (about 20 years), the nature of its origins, and the variance in the goals of its practitioners. Defining environmental education, particularly for the benefit of those who reside in the relatively established niches of the academic world, has been described as a continuing dilemma (Disinger, 1983). An evolution from roots in nature study, conservation education, and outdoor education has been addressed in the literature of the field since the term first appeared (McInnis, 1972; Swan, 1975; Johnson, 1977). Nonetheless, although neither a universally accepted definition nor a consensus concerning focus exists, a substantive structure and framework have been identified, and a set of goal levels advanced (Hungerford, et al., 1980, pp. 42-47):

- ecological foundations;
- a conceptual awareness of issues and values;
- an investigation and evaluation of these skills; and
- training in and application of citizenship action skills.

These goals are reflective of those advanced by the participant in the 1977 UNESCO/UNEP Intergovernmental Conference on Environmental Education held in Tbilisi, Georgia, USSR (UNESCO, 1978), and are also in accordance with a previous statement of "the superordinate goal of environmental education" (Harvey, 1978, p. 1):

> "To aid citizens in becoming environmentally knowledgeable and, above all, skilled and dedicated citizens who are willing to work, individually and collectively, toward achieving and/or maintaining a dynamic equilibrium between quality of life and quality of the environment."

For present purposes, Bogan's 1973 characterization of environmental education as the interdisciplinary process of inquiry into both the specific and the general environmental implications of human activities viewed from the perspective of social needs and values as they relate to society may be most useful, in that it clearly foreshadows today's S/T/S emphasis. To some extent the environmental education community serves as a common thread joining nature study, conservation education, and outdoor education, but it also has explicit and necessary interconnectiions with science and technology and the issues and problems of society (Disinger, 1986). It is generally accepted that the impetus for the synthesis which led to environmental education circa 1970 was increased concern for environmental quality (or, stated negatively, fear of severe deterioriation of quality of life caused by reported and anticipated plummeting of environmental quality--viz., due to pollution and associated concerns).

Thus, the rationale for initiating environmental education was in effect to refine and redirect the goals of those predecessors, as well as to fill an educational vacuum which was not being served by most educators--attention to the interrelationships between humans and environments.

INTERRELATIONSHIPS

Volk (1984, pp 23-33) has made a rigorous comparison of the Project Synthesis purposes for science education and the Hungerford, et al. (1980) goals for environmental education; she concludes that they have much in common, and are in fact identical in many respects. She also notes that much of the experience the educational community has had with S/T/S education has been accomplished under the rubric of environmental education, and that a strong research and literature base for S/T/S has been reported as environmental education research and literature. Rubba and Wiesenmeyer (1985) have advanced similar arguments. Analysis of the contents of the North American Association for Environmental Education's Summary of Environmental Education Research, 1971-1982 (Iozzi, 1984) reveals much of pertinence to S/T/S educators, for example.

The similarities are clear; allowing for differences in professional vocabularies and for some variance in specific interests, they are essentially the same. Thus, there is significant congruence of opinion as to what the problems are, and in fact what needs to be learned and taught relative to the interrelationships between and among science, technology, society--and environment.

Theory/Practice

Harms (1981) has cited statistics indicating that 90 percent of practicing science teachers emphasize goals directed toward preparing students for further formal study of science, that 99 percent of science teachers have a philosophical orientation only toward a specific science discipline, and that more than 90 percent of all science teachers use a textbook 95 percent of the time, so that the textbook in effect sets the course outline, the framework, the parameters for student experience, testing, and their worldview of science. Yager (1984, pp. 35-37) has also noted that actual implementation of S/T/S programs has been minimal, as has implementation of any of the goals of Project Synthesis beyond that of academic preparation.

Similarly, the pedagogical attractiveness of the integration of content areas for teaching and learning purposes has long appealed to social studies educators. However, they also note a disparity between "what should be" and "what is" with respect to theory and practice, similar to that identified by the science education community. The extent to which "environmental education" has actually been operationalized, in any significant sense, in pre-college education has not been a subject of rigorous study, but is generally conceded to be minimal.

Guiding Principles

The North American Association for Environmental Education (NAEE) has adopted a set of guiding principles which involve S/T/S rhetoric (NAEE, 1984, p. vi):

"Environmental Education should-

- consider the environment in its totality--natural and built; biological and physical phenomena and their interrelations with social, economic, political, technological, cultural, historical, moral, and aesthetic asdpects;

- integrate knowledge from the disciplines across the natural sciences, social sciences, and humanities;

- examine the scope and complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills and the ability to synthesize data from many fields;

- develop awareness and understanding of global problems, issues, and interdependence, helping people to think globally and act locally:

- consider both short and long term futures on matters of local, national, regional and international importance;

- relate environmental knowledge, problem solving, values and sensitivity at every level;

- emphasize the role of values, morality, and ethics in shaping attitudes and actions affecting the environment;

- stress the need for active citizen participation in solving environmental problems and preventing new ones;

- enable learners to play a role in planning their learning experiences and providing an opportunity for making decisions and accepting their consequences; and

- be a life-long process--should begin at a preschool level, continue throughout formal elementary, secondary, and post-secondary levels, and utilize non-formal modes for all age and educational levels."

In a practical sense, it is clear that S/T/S education, however defined and delimited, subsumes to a significant extent the content which environmental education was initiated to purvey, and in fact requires that content for substance. It has been argued that, if only for purposes of clarity, the inclusion of the term "environment" in the title of the S/T/S thrust makes sense (Disinger, 1986; Lubbers, 1986)--S/T/S/E, S/S/T/E, S/E/T/S, for possible examples. The particular abbreviation used here is for convenience, and also to avoid connotations of one-on-one correspondence with S/T/S as it has been defined and promoted.

It is just as clear that, if either or both of "technology" or "environment" are to receive significant attention in pre-collegiate

general education curricula, they must do so, at least under present circumstances, primarily within the context of the natural and/or social sciences, for the simple reason that those existing entities, both established in school curricula, offer the best apparent fits--and because there is interest among both theorists and practitioners within the science education and social studies education communities. Another reason is, of course, that there is no widespread curricular entity called "technology education," nor has environmental education established a niche as a distinct curricular offering.

Evidence already cited clearly indicates that current levels of implementation of S/T/S goals, or of any goals relating to "technology" and/or "environment," are modest at best, in spite of a decade of promotion. The gap between theory and practice here may be of similar magnitude to that described by Snow (1963) between "science" and "humanities." As Roth pointed out (1978, pp. 21-22), leaders tend to move faster than the pack; at some point, it becomes incumbent upon theorists to advance such overwhelming arguments that practitioners will provide, or provide for, their own leadership for the implementation stages, or to wait until those who must do the implementing catch up at their own speeds, or to help provide for facilitation, leadership and assistance--that is, to find ways to "get on with it." Similar discussions of the theory-practice gap have been presented by many; a particularly articulate discussion of the divergent perspectives of the two "sides" was advanced by Guba (1968).

THE SURVEY

The survey reported here was an attempt to determine the extent of implementation of Science/Society/Technology/Environment (S/S/T/E) Education nationwide, by seeking input from representatives of the state education agencies. These agencies are pivotal with respect to statewide efforts in their assigned areas; because education in the United States is constitutionally a function and a responsibility of each state, their roles are critical to the implementation of all aspects of education, and they find it necessary to be "practical."

Part of their responsibility necessitates contacts with local education agencies--school districts, etc.--and in many cases with teacher education institutions, often in liaison capacities.

A survey now underway under the direction of the Center for Science, Technology and Society at The Pennsylvania State University (Rubba, 1986b) explicitly deals with S/T/S but does not mention the "environment" aspect; for that survey, response was requested from state education agency specialists in science education and social studies education. A report of the survey, prepared by Peter A. Rubba, Barbara A. Barchi, and Robert J. Wambaugh, is scheduled for publication in the Penn State S-STS Reporter, vol. 6 no. 2, in early 1987.

State education agency specialists for environmental education have on several occasions over the past 15 years assisted ERIC/SMEAC in the development of "current practice" surveys, as mentioned in the preface to

this report (pp. iii-iv). The current effort is an extension of this activity, with one important variation--explicitly attempting to delineate interrelationships between environmental education and other, more traditional curricular areas, particularly as those areas attempt to incorporate some of the key characteristics of environmental education. The focus of this survey was specifically at the interface between science education and environmental education, though its open-ended format provided opportunity for expression of other relationships.

The remainder of this section summarizes the results of study; lightly edited survey responses follow (pp. 19-113). The survey form is reproduced in an Appendix (pp. 115-123).

Procedure

Questionnaires were sent in October 1986 to state education agency personnel in each of the fifty states, and also in the District of Columbia, Puerto Rico, and Samoa. A second mailing was later sent to non-respondents to the first. Ultimately, responses were received from 41 of the 53 targeted entities, a 77.4% response rate (Table 1). The questionnaires were addressed to members of the Council of State Science Supervisors (CS-3) as listed in its 1986 Directory, as well as to individuals identified as environmental education specialists in the same agencies. The latter list was based on a roster compiled by Disinger and Bousquet (1982), as modified by information regarding changes gathered informally through professional contacts in the state education agencies.

Table 1. Survey Addressees and Respondents

	Agencies	Individuals
Addressees	53	80
Responses received	41 (77.4%)	48* (60.0%)

* Includes 12 individual respondents who were not initial addressees.

In 22 cases (41.5% of the 53 target agencies), questionnaires were sent to more than one individual within the same agency. This was occasioned by multiple listings on the CS-3 roster, or by the identification of different individuals on the CS-3 and environmental education listings. In each of these cases, addressees were advised of the identities of other recipients within their agencies.

In 31 of the 53 target agencies (58.5%), only one individual was mailed a questionnaire, in each case because the science education specialist was also identified as the environmental education specialist--that is, he or she was named on both of the source lists. Among the 48 individuals who responded, 12 (25.0%) were not the addressees originally targeted.

Of the 41 agency level responses ultimately received, six (14.6%) were submitted by two or more people, representing different functions within the agency. In five of the six, the co-submittors carried titles indicating responsibility in science education and in environmental education, respectively. In one case, co-submittors carried titles indicating responsibility in curriculum/instruction and conservation education, respectively. In the sixth case, one co-submittor carried the title of program manager, and the other science-mathematics specialist (Table 2).

Table 2. Titles of Individual Respondents (N=48)

	#	%
Science only	24	50.0
Environmental Education only	9	18.8
Conservation Education only	2	4.2
Mathematics only	1	2.1
Science/Mathematics	2	4.2
Science/Environmental Education	4	8.3
Science/Math/Environmental Education	1	2.1
Other	5	10.4
	48	100.1

Nine of the 47 individual respondents (19.1%) had titles which specified solely environmental education responsibility, while two (4.3%) other individuals' titles indicated responsibility only in conservation education. By far, the bulk of the individual respondents (26, or 55.3%) had titles which did not indicate responsibility for environmental education or conservation education. However, the term "science" appeared in the title of 31 of the 48 individuals listed as respondents (64.6). In 5 cases (10.4%), no content area was specified in the title of a respondent. In 17 cases (35.7%), a respondent was an individual who had responded to the 1982 Disinger-Bousquet survey, while three other respondents (6.3%) were individuals who had been identified as bearing responsibility for environmental education within their agencies at an earlier date.

Policy

Of the 41 agency responses, two (4.9%) left blank the space for describing the policy of the agency with respect to S/S/T/E education, while 12 others (29.3%) indicated that their agencies has no policy in this regard. One additional response (2.4%) specified that the agency referenced maintains a "local control" policy, suggesting that there are no state-wide thrusts in any curricular area, including S/S/T/E. Thus, 15 of the responses (36.6%)

may be interpreted to indicate that those agencies have no operational policy with respect to S/S/T/E or related areas. (Table 3).

Table 3. Policy Concerning S/S/T/E (N=41 agencies)

	#	%
No response	2	4.9
No S/S/T/E policy	12	29.3
Environmental Education separate from science	9	22.0
Local control	1	2.4
Infused	17	41.5
	41	100.1

Twenty-nine of the 41 responses (70.7%) specifically mentioned S/T/S and/or S/S/T/E somewhere in their responses, while the remainder (12, or 29.3%) did not. This suggests that most state education agencies have initiated at least some S/T/S-directed activity, whether or not "environment" is included.

Also in response to the query regarding policy, nine responses (22.0%) indicated that environmental education is administered separately from science education, while 17 responses (41.5%) reported that environmental education and/or S/S/T/E education are subsumed by or infused into the total curriculum, frequently as an adjunct of science education.

There appears to be an assumption that infusion of environmental education into the curriculum, particularly into science education, in effect produces S/S/T/E education. Three of the 17 "infusion responses" specifically stated that S/S/T/E is "implicitly" part of the agency's science education and/or general education effort. Similar terms appearing in responses included forms of these words: "integrate" (6 cases), "incorporate" (4 cases), "include" (2 cases), "infuse" (1 case), and "covert" (1 case).

Curriculum Development

Of the 41 responses, eight (19.5%) indicated no state agency involvement in the development of curriculum materials related to S/S/T/E. (Table 4). Model guides were noted by eight respondents (19.5%), while state standards dealing with this topic were mentioned by four (9.8%). Published guides and similar resources were noted by 17 (41.5%), while nine (22.0%) indicated their agencies' support of local efforts in the area. It should be noted that, of those materials listed by respondents, nearly all are in related areas, and do not carry titles or descriptions specifically targeted on or commonly identified as S/S/T/E or S/T/S. The sole exception

to this generalization is New York State's Middle/Junior High School Syllabus, Block J: Science, Technology, and Society.

Table 4. S/S/T/E Curriculum Development (N=41 agencies)

	#	%
None	8	19.5
Model Guides	8	19.5
State Standards	4	9.8
"Resources"	17	41.5
Support local efforts	9	22.0
	46*	112.3*

* Some responses indicated multiple categories

In-service for Teachers

With respect to in-service educational opportunities for teachers in the S/S/T/E area, three agencies (7.3%) made no response, while three others (7.3%) indicated their absence. Thirty-four agencies (82.9%) indicated in-service efforts of varying foci, all of which at least implied a relationship to S/S/T/E, while one (2.4%) mentioned emphasis on local, rather than state-level, in-service opportunities. (Table 5).

Table 5. In-service Opportunities for S/S/T/E (N=41 agencies)

	#	%
No response	3	7.3
None	3	7.3
Opportunities exist	34	82.9
Local opportunities only	1	2.4
	41	99.9

Frequently noted among in-service opportunities were "external programs" such as Project Learning Tree (by six agencies, or 14.6%), Project WILD (by six agencies, or 14.6%), and The CLASS Project (by six agencies, or 14.6%). Also mentioned were Investigating Your Environment and Outdoor Biological Instructional Strategies (by one agency), while one other mentioned the National Environmental Education Development (NEED) project. Two agencies (5.0%) listed a multiplicity of such efforts, including them with a number of state-level efforts developed over time, as appropriate to S/S/T/E

considerations. Because many of these external programs are known to have extended their outreach into many states, it is assumed that many respondents did not choose to identify them as "state activities" in the S/S/T/E area. Had respondents been requested to identify in-state use of these programs, their identification levels might have been higher--unless, of course, they are not considered as related to S/S/T/E.

Documentation--Curriculum/Instructional Materials, etc.

Generally, responses to the question of documentation were reflective of responses to the earlier query dealing with curriculum development; in a few cases, they mirrored responses to the in-service question. (Table 6). Eight agencies (19.5%) indicated that they had no available documentation related to S/S/T/E, while 10 (24.4%) made no response to the question. Reference to standards/framework documents or to various state guides or similar resources totaled 20 (48.8%). Three agencies referred specifically to external documents (i.e., Project Learning Tree, Project WILD, The CLASS Project), though--again--these programs may be under-represented here. Two agencies (4.9%) made mention of their support of development of curriculum documentation at sub-state levels. Many of the state-level documents noted in the responses are available through the ERIC system.

Table 6. Documentation Relevant to S/S/T/E (N=41 agencies)

	#	%
No response	10	24.4
None available	8	19.5
Related documents	20	48.8
Use only external documents	3	7.3
	41	100.0

Local Contacts

A total of 212 individuals were identified by 27 of the responding agencies (65.9%) as "key local contacts" for S/S/T/E; 14 agencies (34.1%) identified no such contacts. (Table 7). One state listed 54 names in this category, submitting its roster of all current recipients of state funding for environmental education efforts. Another listed 73 names, providing rosters of a statewide network and an advisory committee.

Table 7. In-state contacts for S/S/T/E (N=41 agencies)

	Local Contacts	Teacher Education contacts
None listed	14 (34.1%)	22 (53.7%)
One or more	27 (65.9%)	19 (46.3%)
	41 (100.0%)	41 (100.0%)

The purpose of this question was to develop some feeling for the presence of activity in S/S/T/E at local levels, but the survey was not designed to investigate it thoroughly. Rubba's study (1986a) of S/T/S activity at a local level provides more information along this line, though (again) "environment" was not explicitly addressed in it. The extent and formulations of local implementation, for both S/T/S and S/S/T/E, is clearly a topic of necessary additional study.

Teacher Education Contacts, "Other Contacts"

Forty-seven individuals, mostly teacher educators in colleges and universities, were identified as teacher education contacts, by 19 agencies (46.3% of the respondents). None were listed by the other 22 respondents (53.7%). (Table 7).

Five agencies (12.2%) named a total of 11 other key contacts, declining to place them in either of the listed categories. Though no request for such information was made, references were made to five "National-level" entities--the National Science Teachers Association and its "search for excellence" activities, the Science through Science, Technology, and Society Project at The Pennsylvania State University, the "You, Me, and Technology" Project (Bloomington, IN), the S/T/S Project of the Social Science Education Consortium (Boulder, CO), and the Biological Sciences Curriculum Study (Colorado Springs, CO).

Summary

An analysis of survey responses indicates that in no case is S/S/T/E Education identified as a formalized activity of a responding agency, though many indicate their attention to it. The former is not surprising; at no level within the educational community has a potential coupling of S/T/S and environmental education been verbalized, with the exceptions of occasional academic papers such as those by Volk (1984), Rubba and Wiesenmeyer (1985), Lubbers (1986), and Disinger (1986).

However, responses to this survey indicate that such a coupling has been and is being accomplished operationally, at least at the state education agency level. Three respondents used the word "implicit" to describe their functional understanding and regularized treatment of S/S/T/E, while

another chose to employ the term "covert" to describe the inclusion of environmental topics in a science curriculum. Use of words such as "infuse" and "related" appear to bring the number of agencies indicating their involvement in S/S/T/E-type activities to 29, or 70.7% of the sample responding. The citation of many on-going activities, particularly in terms of publications and in-service teacher education efforts, serve to support this contention. Similar logic, when applied to the responses reported in this study, leads to strong inference that similar situations pertain at local levels, though no data concerning extent at local levels were gathered in this study.

Many of the activities reported by these agencies have been in operation for some time, predating emphases on S/T/S (at least by that name) and verbalization of S/S/T/E. The identification of ongoing activities in response to questions dealing with S/S/T/E may be assumed to indicate that, in the eyes of many respondents, their agencies have been involved in S/S/T/E Education for some time, and that this activity is continuing, perhaps even institutionalized.

Variations in response to the questions raised, which were open-ended and designed to allow diversity of expression, probably say more about differences in the educational philosophies and operational procedures of the various state education agencies than they do about science education, environmental education, S/T/S, or S/S/T/E. There are multiple approaches to dealing with the responsibilities of leadership and management of the educational enterprise, which in the United States is the responsibility of the state education agencies. These approaches generally predate and are independent of curricular considerations. This is, of course, to be expected, given the diversity of the country and the unique combinations of circumstances within the regions and states. Nonetheless, it appears that a union of an expanded S/T/S thrust with a redirected environmental education, or perhaps a revitalization of environmental education through capitalization on its centrality to S/T/S concerns, is now occurring. It remains to be seen how extensively this is happening at local levels.

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RESPONSES TO SURVEY

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Policy of the Department concerning Science/Society/Technology/Environment Education:

The department's policy is to infuse STS and Environment into other curricular areas. Alaska does not have an Environmental Education Curriculum Guide. The State does not have a policy concerning content in state or district curriculum, or instruction.

Curriculum development in Science/Society/Technology/Environment Education:

Alaska does not have a state-mandated curriculum. As described above, environmental education is infused into all curricular areas.

The State Model Curriculum Guide is up for review this year, and will reflect a new emphasis on STS and Science in Human Affairs. This model curriculum reflects a consensus view of science education in Alaska, and is used by many districts in planning their own curricula.

In-service for teachers in Science/Society/Technology/Environment Education:

"Inquiry Science and the Computer" (ISAC) is a classroom-based research project focusing on the use of the computer to facilitate "inquiry science in human affairs." This project was initiated in Autumn 1986, as a week-long course. Many of the particular units under research are environmental education or STS units.

ISAC is the first funded project of a diversity of efforts that should coalesce into a statewide Science Consortium. The Consortium, in the planning stages, is a collaboration of the State Department of Education, University, and local school districts. The focus of the consortium is "Inquiry Science in a Real-World Context." Many of the units we envision sharing through consortium training are STS and environmental education.

"Alaska Resources Kit: Minerals" is a set of teaching materials that deal with issues of technology and development. We coordinated development of the materials and are now coordinating training. The project is funded by the mining community.

Documentation--curriculum/instructional materials, etc.:

We have nothing now. The new curriculum guides and the documentation of the classroom-based research should be completed and published by Summer 1987.

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Policy of the Department concerning Science/Society/Technology/Environment Education:

The Arizona Department of Education has no policy in this regard.

Curriculum development in Science/Society/Technology/Environment Education:

No programs are currently funded.

In-service for teachers in Science/Society/Technology/Environment Education:

A 15-hour in-service training program on scientific literacy is being planned for 1988.

Documentation--curriculum/instructional materials, etc.:

None listed.

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ARKANSAS

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Policy of the Department concerning Science/Society/Technology/Environment Education:

The Education Standards of Arkansas include the teaching of science and environmental (society and technology) issues. Students are tested on the concepts in the 6th and 8th grades.

Curriculum development in Science/Society/Technology/Environment Education:

These concepts are included in our Science Course Content Guides (state guides).

In-service for teachers in Science/Society/Technology/Environment Education:

This is an area that we are weak in at the present moment. In the past this was a strong point.

Documentation--curriculum/instructional materials, etc.:

The Science Course Content Guides are not available at the present moment.

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Policy of the Department concerning Science/Society/Technology/Environment Education:

Environmental education is a separate program, but it is administered through the science unit. The State of California Education Code specifies that instruction in wise use of natural resources and protection of environmental quality be provided in all appropriate subject matter areas and grade levels, particularly in science and social studies in grades K-12. A special fund (Environmental License Plate Fund) pays for local assistance projects which must relate to the above.

Curriculum development in Science/Society/Technology/Environment Education:

No response indicated (see below).

In-service for teachers in Science/Society/Technology/Environment Education:

No response indicated.

Documentation--curriculum/instructional materials, etc.:

The K-12 California Environmental Education Guides are being revised and will be ready for school distribution in June 1987. We also use Project WILD, Project Learning Tree, and the CLASS Project, which is being revised for California use. Also, California is doing a model resident outdoor school curriculum and instructional guide. A number of state-funded projects are underway. Much of the completed work from license plate grants are collected in two locations:

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The current editions of the California Environmental Education Guides, and many other California curriculum/instructional and other materials, are cataloged in and available through the ERIC system.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in California:

The California Department of Education co-sponsors eight environmental education fairs throughout the state. These events provide an opportunity for teachers to meet representatives of governmental resource management agencies, citizen conservationists, and others who have materials, services, or expertise of value in the classroom: Contact persons are:

Los Angeles City Unified School District, Youth Services Account - Luann Mums

Bay Area Environmental Education Fair Committee - Ken Hanley

Sacramento Science Center and Junior Museum - Pat McUicar

Shasta County Office of Education - Brian Swaggarty

Ventura County Office of Education, Environmental Education Fair Committee - Cliff Rodriguez

Central California Science Specialists Association - Bob Zupp

Humboldt County Office of Education - Mark Raney

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Policy of the Department concerning Science/Society/Technology/Environment Education:

The Colorado Department of Education does not have a formal policy regarding the development and furtherance of instruction dealing with science/society/technology/conservation/natural resources/environment. The Curriculum and Instruction Project has consultants that provide technical assistance in those areas. As a local control state, it is up to the local school district board of education to develop and implement curriculum in all areas, including the areas specified in the survey inquiry. The Curriculum and Instruction Project does actively promote the areas in question, but in an integrated fashion.

Curriculum development in Science/Society/Technology/Environment Education:

The same response applies for this area.

In-service for teachers in Science/Society/Technology/Environment Education:

Inservice to educators is provided on an as needed and requested basis. The conservation and environmental education senior

consultant works with numerous state agencies as well as other staff of the Curriculum and Instruction Project (social studies, technology, and science consultants). This awareness is translated into comprehensive inservice programs and workshop presentations.

Inservice of Project WILD is decentralized into five regions administered by the Colorado Division of Wildlife (DOW) with technical and logistical support shared with the state coordinator in the DOW and the Curriculum and Instruction Project CES/CDE.

A similar network exists with the Colorado State Forest Service in its 13 state-wide forest districts. Co-coordinators manage Project Learning Tree from CSFS Headquarters in Fort Collins and Curriculum and Instruction Project - CES/CDE Denver.

The CLASS Project (National Wildlife Federation) and the Colorado Model for Conservation Service are intermittently inserviced through either or both of these networks. The Class Project is also independently inserviced through the Colorado Wildlife Federation with some cooperation.

Documentation--curriculum/instructional materials, etc.:

None available that can be forwarded.

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Townsend Building
Dover, Delaware 19901
(302) 736-4885

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Delaware Department of Public Instruction provides inservice to teachers on a wide variety of topics, including STS and Environmental Education. STS issues as well as environment issues are covered in our curriculum guides and Standards of Performance.

Curriculum development in Science/Society/Technology/Environment Education:

As above.

In-service for teachers in Science/Society/Technology/Environment Education:

Yes. Three annual one-week long conferences focus on these issues.

Documentation--curriculum/instructional materials, etc.:

Note above.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Delaware:

Dr. Frank Castelli, Supervisor
Pennsylvania Avenue
Claymont, DE 19703

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

DISTRICT OF COLUMBIA

Respondent:

Mary B. Harbeck
Supervising Director, Science
Instructional Services Center
Langdon School
20th and Evarts Streets, N.E.
Washington, DC 20018

Policy of the Department concerning Science/Society/Technology/Environment Education:

The science program includes "environment" lessons at every level--primary, intermediate, junior high, and senior high. These lessons are included in the competency-based curriculum, K-12, formulated by this district, for all students. We have an elective course, "Science and Social Issues," at the 10-12 level for students who need scientific literacy but are not usually interested in physics and chemistry.

Curriculum development in Science/Society/Technology/Environment Education:

Our curriculum is in constant revision at one level or another. We try to revise at least once every five years.

In-service for teachers in Science/Society/Technology/Environment Education:

We hold workshops for teachers when we have the opportunity to obtain materials such as NEED, Energy Sources, COMETS, etc.

Documentation--curriculum/instructional materials, etc.:

Competency-Based Curriculum Guide: Science and Social Issues has been entered into the ERIC system.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in the District of Columbia:

Navarro Bharat, Teacher
Anacostia High School
16th and R Streets, S.E.
Washington, DC 20020

Bernard Cole, Teacher
Dunbar High School
1301 New Jersey Avenue, N.W.
Washington, DC 20001

William Edmead
H. D. Woodson High School
55th and Eads Streets, N.E.
Washington, DC 20019

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None known.

NOTE:

Each Summer we hold a Nature-Computer camp for 500 sixth graders (85 per week for six weeks). At this camp, the students study the ecology of three environments-- woods, fresh water streams, mountain geology.

FLORIDA

Respondent:

Martha M. Green
Science Consultant, High School
Florida Department of Education
Knott Building
Tallahassee, FL 32301
(904) 488-1701

Policy of the Department concerning Science/Society/Technology/Environment Education:

SST is incorporated into all science curricula, grades 9-12. There are two environmental education courses at the high school level; environmental education is in revision statewide.

Curriculum development in Science/Society/Technology/Environment Education:

See above.

In-service for teachers in Science/Society/Technology/Environment Education:

None is specified; local school districts determine in-service needs.

Documentation--curriculum/instructional materials, etc.:

None listed.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Florida:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

GEORGIA

Respondent:

* Dallas Stewart
Secondary Science Consultant
Georgia Department of Education
Office of Curriculum Services
Atlanta, Georgia 30334
(404) 548-4838

* Retired October, 1986

NOTE: At the time of my retirement, the Georgia Department of Education had initiated work on a Science/Technology/Society project in cooperation with the Social Science Education Consortium (SSEC) in Boulder, Colorado.

NOTE ADDED IN PROOF:

Received from: Gwen Hutcheson
Social Science Coordinator
Georgia Department of Education
Twin Towers East
Atlanta, Georgia 30334
(404) 656-2586

The Georgia Department of Education has no policy with regard to Science/Society/Technology/Environment Education. Gwen Hutcheson is a member of the committee working with the Social Science Education Consortium (SSEC) of Boulder, CO, to develop curriculum materials on STS; an in-service phase is being planned as part of this project. No documentation is currently available. No key contacts were listed. (Also note that this response was not considered in developing the summary of responses on pages 1-18 of this volume).

HAWAII

Respondent:

John Hawkins
Environmental Education Specialist
Hawaii Department of Education
189 Lunalilo Home Road, 2nd Floor
Honolulu, Hawaii 96825
(808) 395-9252

Policy of the Department concerning Science/Society/Technology/Environment Education:

A 1974 Hawaii State legislative act encouraged formal and informal environmental education for all ages. Funds have been included in the Department of Education's biennium budget for the implementation of the science and environmental education programs.

Curriculum development in Science/Society/Technology/Environment Education:

A portion of the allocated funds are targeted for curriculum development to meet the needs of students and teachers in the K-12 continuum.

In-service for teachers in Science/Society/Technology/Environment Education:

Annually there is a two-week summer institute for both the science and environmental education programs. Additionally, throughout the school year, there are regularly scheduled workshops on instructional resources, strategies, site-specific activities, and use of environmental education resource centers.

Documentation--curriculum/instructional materials, etc.:

- Science Curriculum Guides, K-12
- Environmental Education Curriculum Guides, K-12
- Science for Self and Society
- Energy Use and the Environment Modules -
  Instructional module for each grade level K-6
  Instructional module for the secondary content areas
- Marine Education Framework, K-12
- Water: A Vital Resource (module for grades 6-7)

- Coral: A Hawaiian Resource (module for grades 7-8)
- Kauai: Streams and Estuaries (module for grades 7-8)
- Molokai: Fishponds (module for grades 7-8)
- Compendium on Campsites, K-12
- Compendium on Coastal Field Sites, K-12
- Monograph series on Hawaii's Endangered Natural Resources, 9-12
- Field Trip Safety Guidelines, K-12
- Geothermal Energy: A computer Simulation (Physics and pre-calculas students)

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Hawaii:

Walter Hiraishi
Environmental Education
Resource Teacher
Windward Oahu EE Center
45-233 Kulauli Street, Rm. C-6
Kanoehe, HI 96844

Suzanne C. Fonoti
District Education Specialist
Honolulu District Office
Department of Education
4967 Kilauea Avenue
Honolulu, HI 96816

Richard Mortemore
Resource Teacher
Keakealani Outdoor Education
Center
Hawaii District
P. O. Box 4160
Hilo, HI 96720-0621

Gordon Ozawa
District Education Specialist
Central District Office
Department of Education
1136 California Avenue
Wahiawa, HI 96786

Kerry Koide
District Education Specialist
Leeward District Office
Department of Education
94-366 Pupupani Street
Waipahu, HI 96797

Colleen Murakami
Marine Education Coordinator
Hawaii Department of Education
189 Lunalilo Home Rd., 2nd Flr.
Honolulu, HI 96825

Gladys Naitoh
District Education Specialist
Windward District Office
Department of Education
45-955 Kamehameha Highway
Kanoehe, HI 96744

Masue Ando
District Education Specialist
Hawaii District Office
Department of Education
P. O. Box 4160
Hilo, HI 96720-0621

Cheryl Tanouye
District Education Specialist
Maui District Office
Department of Education
54 High Street
Wailuku, HI 96793

Shirley Akita
District Education Specialist
Kauai District Office
Department of Education
3060 Eiwa Street
Lihue, HI 96766

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. Frank Pottenger
Curriculum Development
Research Group
University of Hawaii
1776 University Avenue
Honolulu, HI 96822

Robert Campbell
Science Education
University of Hawaii
1776 University Avenue
Honolulu, HI 96822

IDAHO

Respondent:

Richard Kay, Science Consultant
Idaho Department of Education
L. B. Jordan Building
Boise, Idaho 83720
(208) 334-2281

Policy of the Department concerning Science/Society/Technology/Environment Education:

There is no written policy. We support activities to further instruction in or related to SST, including environmental programs.

Curriculum development in Science/Society/Technology/Environment Education:

We utilize a number of "external" curriculum materials throughout the state, i.e., Project WILD, Project Learning Tree, Investigating your Environment, Outdoor Biological Instructional Strategies, etc.

In-service for teachers in Science/Society/Technology/Environment Education:

Co-operative programs train about 1000 teachers a year in in-service environmental education programs, including four separate week long summer programs.

Documentation--curriculum/instructional materials, etc.:

None Listed.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Idaho:

Ilene Healy, Teacher
Wood River High School
Hailey, ID 83333

Gary Highley, Principal
Bonneville High School
Route 1, Box 461
Idaho Falls, ID 83401

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None Listed.

ILLINOIS

Respondent:

Don Roderick, Educational Consultant
Science and Environmental Education
Illinois State Board of Education
100 North First Street
Springfield, Illinois 62772
(217) 782-2826

Policy of the Department concerning Science/Society/Technology/Environment Education:

The State Board of Education has recently adopted a set of learning outcomes for science that also includes environmental education. SST objectives are throughout the document, but not identified as such. The teachers who participated in the development of these objectives have a strong commitment to the STS agenda.

Curriculum development in Science/Society/Technology/Environment Education:

I have been working with a group representing the colleges of education from all the major teacher training institutions in Illinois. This group (Illinois Council for Science Education) was funded last summer to develop and conduct four teacher resources based on science-society ideas.

In-service for teachers in Science/Society/Technology/Environment Education:

There is no program in place. However, we are in the process of negotiating with the National Wildlife Federation to train facilitators in The CLASS Project, which has an excellent Environment-Society format.

Documentation--curriculum/instructional materials, etc.:

The Illinois Council for Science Education is beginning to develop position papers on topics they consider important, including an STS position paper. We project an SST resource center at the University of Illinois.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Illinois:

Dr. George Kieffer
Professor of Biology
University of Illinois
393 Morrill Hall
505 South Goodwin
Urbana, IL 61801

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

INDIANA

Respondent:

Joe Wright
Environmental Education Consultant
Office of School Assistance
Indiana Department of Education
229 State House
Indianapolis, Indiana 46204
(317) 269-9641

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Indiana Department of Education has formal course descriptions; Science/Society/Technology/Environment concerns are implicitly part of the package. Also, they are implicitly part of proficiencies statements and course requirements.

Curriculum development in Science/Society/Technology/Environment Education:

At this stage, we are involved in the implementation of K-12 science proficiencies and course requirements, which implicitly address S/S/T/E concerns.

In-service for teachers in Science/Society/Technology/Environment Education:

This follows the same pattern as above.

Documentation--curriculum/instructional materials, etc.:

Formal statements of proficiencies and course descriptions have been developed, as above.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Indiana:

The State of Indiana has a Science and Enviromental Education Resource Network. Among its members are:

Dr. Hans O. Andersen
Department of Science and Environmental Education
204 Education Building
Indiana University
Bloomington, IN 47405

Dr. Charles "Kip" Ault
Department of Science and Environmental Education
204 Education Building
Indiana University
Bloomington, IN 47405

Dr. Charles Barman
Associate Professor of Education
Indiana University - Kokomo
2300 South Washington Street
Bluffton, IN 46902

Jon Bennett
East Side Elementary
1100 East Spring Street
Bluffton, IN 46714

Dr. Chris Buethe
School of Secondary Education
Indiana State University
Terre Haute, IN 47809

Judy Carley
Indiana Farm Bureau
301 East Washington Street
Indianapolis, IN 46206

Sam Carman
Indiana Department of Natural Resources
613 State Office Building
Indianapolis, IN 46204

Barbara Chenoweth
Division of Energy Policy
Department of Commerce
1 North Capitol Avenue
Indianapolis, IN 46204

Lyn Chattin
R. R. #2, Box 177
Lexington, IN 47138

Sam Chattin
Scottsburgh Junior High School
South Third Street
Scottsburgh, IN 47170

Priscilla "Gus" Costello
Department of Science
South Vigo High School
3737 S. 7th Street
Terre Haute, IN 47802

Mary M. Cressel
Public Affairs Specialist
Soil Conservation Service
U. S. Department of Agriculture
5610 Crawfordsville Road,
Suite 2200
Indianapolis, IN 46224

Michele Dietrich
Social Studies Development Center
Indiana University
Bloomington, IN 47405

Ron Dixon
Marion County Soil & Water Conservation District
Suite 1201
5610 Crawfordsville Road
Indianapolis, IN 46224

William Drutt
Division of Health Education
Indiana State Board of Health
1330 West Michigan Street
Indianapolis, IN 46202

Joyce Fitzgerald
Peabody Coal Company
P. O. Box 1112
20 N. W. First Street
Evansville, IN 47702

Pete Fortune
Weston Elementary School
140 Polk Street
Greenfield, IN 46140

Victor Fraser
Deep River Environmental Center
1300 Liverpool Rd.
Lake Station, IN 46405

Dr. Dorothy Gabel
Department of Science and
Environmental Education
204 Education Building
Indiana University
Bloomington, IN 47405

Warren Gartner
Project WILD Coordinator
5610 Crawfordsville Road,
Suite 2200
Indianapolis, IN 46224

William Greathouse
Homecroft Elementary School
1551 Southview Drive
Indianapolis, IN 46227

Joseph Gwinnup, Principal
Grassy Creek Elementary
10330 East Prospect
Indianapolis, IN 46239

Dr. Jon Hendrix
Department of Biology
Ball State University
Muncie, IN 47306

Lew Huston
Department of Science
Marion High School
750 W. 26th Street
Marion, IN 46953

Dr. Susan Johnson
Biology Department
Ball State University
Muncie, IN 47306

Tom Gourley, Principal
Nicholson Elementary School
1010 Lane Avenue
Crawfordsville, IN 47933

Florence Juillerat
Editor, HASTI
Science Education Program
Biology Department, IUPUI
Cavanaugh Building
425 N. Agnes
Indianapolis, IN 46202

Nancy Kasdorf
3707 Chapman Road
Huntertown, IN 46743

Emily Kress
R. R. #1, Box 465
Parker City, IN 47368

Dr. Gerald H. Krockover
Professor of Education and
Geosciences
Director of Undergraduate
Studies and Field Experiences
Department of Geosciences
Geosciences Building
Purdue University
West Lafayette, IN 47907

Dr. Glenn Linnert
Director, Indiana Curriculum
Assistance Center
618 E. Market Street, Rm. 205
New Albany, IN 47150

Dr. Tim Lyons
School of Natural Resources
Ball State University
Muncie, IN 47306

Dr. Gerald Marker
School of Education
W. W. Wright Building
Indiana Unviersity
Bloomington, IN 47405

Howard Michaud
301 East Stadium Drive
West Lafayette, IN 47907

Shelley Mitchell
Conservation Education
Specialist
5610 Crawfordsville Road,
Suite 2200
Indianapolis, IN 46224

Dr. John Moody
School of Education
Indiana University - Southeast
New Albany, IN 47180

Dr. Marshall Parks
Science Teaching Center
Indiana State University
Terre Haute, IN 47809

Dr. Kenny Potts
Wilson Education Center
630 Meigs Street
Jeffersonville, IN 47130

Dr. Thomas Rillo, Director
HPER Building
Indiana University
Bloomington, IN 47405

Fred Risinger
Social Studies Development Center
Indiana University
Bloomington, IN 47405

Dr. Robert H. Rivers
Education Department
Purdue University - Calumet
Hammond, IN 46323

Gary Robb, Director
Bradford Woods
Martinsville, IN 46151

Mike Shipman
Outdoor Education
Indianapolis Public Schools
120 E. Walnut Street
Indianapolis, IN 46204

Karen Simons
Naturalist
Conner Prairie Pioneer Settlement
13400 Allisonville Road
Noblesville, IN 46060

Teena Sechler
Wayne-Hoosier National Forest
3527 Tenth Street
Bedford, IN 47427

Gregg Smith
Crothersville High School
North Preston Street
Crothersville, IN 47229

David F. Sodervick, Principal
O. J. Neighbours Elementary
1545 N. Wabash Street
Wabash, IN 46992

Kathy Steele
Tuttle Junior High School
612 South Elm Street
Crawfordsville, IN 47933

Ned Stump
Prairie Heights Senior High School
R. R. #2, Box 600
Lagrange, IN 46761

Charlotte Swonder, President
Illiana Cypress Audubon Society
P. O. Box 596
Vincennes, IN 47591

Dr. Don Van Meter
School of Natural Resources
Ball State University
Muncie, IN 47306

Sam Vaughn
Visitor Service Specialist
Indiana Dunes National Lakeshore
1100 N. Mineral Spring Rd.
Chesterton, IN 46304

William Vernon
Columbia Middle School
1300 N. 3rd Street
Logansport, IN 46947

Douglas Waldman, Director
Environmental Sciences
Homestead Jr/Sr High School
Fort Wayne, IN 46804

Dr. Roy Weaver
School of Education
Ball State University
Muncie, IN 47306

Don Wertz
Custer Baker Middle School
101 State Road #44
Franklin, IN 46131

Donald Winslow
Coordinator for School Science
Office of School Programs
253 Education Building
Indiana University
Bloomington, IN 46405

Dr. Jan Woerner
Division of Education
Indiana University - Northwest
Gary, IN 46408

David Wright
Camp Tecumseh
Y. M. C. A. Outdoor Education Center
R. R. #2
Brookston, IN 47923

Gordon Mendenhall
Lawrence Central High School
7300 E. 56th Street
Indianapolis, IN 46226

Larry R. Yoder
Associate Professor and Director
Merry Lea Environmental Learning Center
Goshen College
Goshen, IN 46526

Helen Ritchie
Energy Education Consultant
Center for School Improvement and Performance
229 State House
Indianapolis, IN 46204

Thomas E. Barham, Coordinator
Outdoor Education Programs
Bradford Woods Outdoor Education Center
5040 S. R. 67
Martinsville, IN 46151

Dr. J. Dudley Herron
Department of Chemistry
Purdue University
West Lafayette, IN 47907

Members of Indiana's State Science Education Committee include:

Romona Camarata
Department of Education
The Children's Museum
P. O. Box 3000
Indianapolis, IN 46206

Jerry M. Coglazier
(Committee Secretary)
Office of Program Development
Center for School Improvement and Performance
Indiana Department of Education
Room 229, State House
Indianapolis, IN 46204-2798

Floyd Conard, Science Teacher
West Side High School
9th Ave. & Gerry Street
Gary, IN 47406

John Corrigan
(Indiana Curriculum Advisory Council Liaison)
Professor, Department of Life Sciences,
Indiana State University
Terre Haute, IN 47809

Charles S. Elliott, Director
Continuing Education
Stewart Center, Room 116
Purdue University
West Lafayette, IN 47907

Carole Goshorn, Chemistry Teacher
Columbus East High School
230 South Marr Road
Columbus, IN 47201

Jon R. Hendrix
Professor of Biological
Science Education
Department of Biology
Ball State University
Muncie, IN 47306

Ronald E. Woods, Principal
Cumberland Elementary Schools
600 Cumberland Ave.
West Lafayette, IN 47906

Larry M. Sprowl
Planning Administrator
General Motors - CPC Group
2400 W. 2nd Street
Marion, IN 46952

Max Lake
(Committee Chairperson)
Director of Elementary
Administration
Fort Wayne Community Schools
1230 S. Clinton Street
Fort Wayne, IN 46802

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Donald Winslow
Coordinator for School Science
Office of School Programs
253 Education Building
Indiana University
Bloomington, IN 47405

Dr. Gerald H. Krockover
Professor of Education and
Geosciences
Director of Undergraduate
Studies and Field Experiences
Department of Geosciences
Geosciences Building
Purdue University
West Lafayette, IN 47907

Respondent:

Duane Toomsen
Environmental Education Consultant
Instruction and Curriculum
Iowa Department of Education
Grimes Office Building
Des Moines, Iowa 50310
(515) 281-3146

Policy of the Department concerning Science/Society/Technology/Environment Education:

Environmental and Energy Education are a part of the agency's program to assist schools with inservice programs, curriculum development, and articulation of Environmental and Energy Education into the school curriculum. Environmental Education is a full-time position. Energy Education is now vacant, but is scheduled to be filled for an interim period.

Curriculum development in Science/Society/Technology/Environment Education:

Iowa has developed through Department of Education leadership the OUTLOOK Environmental Education Enrichment program, designed as a multidisciplinary program for grades K-12. More than 1000 teachers have been inserviced with a one-week, two semester hour program. A unique feature of the program is the use of a learning cycle for each activity. Also, it is broad-based in terms of the scope of environmental education.

Also, Iowa has developed a full-fledged multidisciplinary energy program for K-12 teachers. It is learning cycle-based, and available in printed form. It will soon be on computer disk for easy access and adaptation of activities.

In-service for teachers in Science/Society/Technology/Environment Education:

The following are in-serviced extensively in Iowa: OUTLOOK, Iowa Developed Energy Activity Sampler (IDEAS), Project WILD, Project Learning Tree, The CLASS Project, Ding Darling Program, Sharing Nature with Children, Conservation for Children.

Documentation--curriculum/instructional materials, etc.:

Both OUTLOOK and IDEAS have been submitted to and are available through the ERIC system. (See above).

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Iowa:

Professor Robert Yager
University of Iowa
Van Allen Physics Building
Iowa City, IA

Professor David McCalley
Science Department
University of Northern Iowa
Cedar Falls, IA 50614

Professor Lynn Glass
Science Education Quadrangle
Iowa State University
Ames, IA 50011

Nancy Kunkle
ICEC Chairman
Ames Central School District
120 South Kellogg
Ames, IA 50010

Robert Rye, Director
Conservation Education Center
R. R. #1, Box 53
Guthrie Center, IA 50155

NOTE: The use of educator naturalists in nearly half of all Iowa counties, and the efforts of Area Education Agency consultants, provides extensive leverage in developing teacher interest, participation, and involvement.

KANSAS

Respondent:

Ramona J. Anshutz
Science Specialist
Kansas Department of Education
120 E. 10th
Topeka, Kansas 66612
(913) 296-2144

Policy of the Department concerning Science/Society/Technology/Environment Education:

The department has no policy in this regard.

Curriculum development in Science/Society/Technology/Environment Education:

Science/Technology/Society is incorporated in the science curriculum guide.

In-service for teachers in Science/Society/Technology/Environment Education:

This is incorporated within the existing curriculum.

Documentation--curriculum/instructional materials, etc.:

None from the agency.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Kansas:

Marlin Wells
Science Specialist
Shawnee Mission School
District # 512
7235 Antioch Road
Shawnee Mission, KS 66204

Stan Martin
Science Specialist
Topeka Public School #501
624 West 24th
Topeka, KS 66611

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None Listed.

KENTUCKY

Respondents:

Frank B. Howard
Science Consultant
Kentucky Department of Education
1829 Capital Plaza Tower
Frankfort, Kentucky 40601
(502) 564-2672

Ann Seppenfield
Environmental Education Consultant
Kentucky Department of Education
1829 Capital Plaza Tower
Frankfort, Kentucky 40601
(502) 564-2672

Policy of the Department concerning Science/Society/Technology/Environment Education:

There is no state mandate regarding the teaching of STS-type courses. STS courses may be taught within the state framework or Program of Studies within the context of Integrated Science (General Science). STS concepts may be integrated into the existing science curriculum or taught as a separate topic via the "Special Topics" course offerings. No specific reference is made to the "Environment," and it may be included.

Curriculum development in Science/Society/Technology/Environment Education:

Curriculum development activities that promote the teaching of STS or STSE are supported by this office.

In-service for teachers in Science/Society/Technology/Environment Education:

No specific requests have been made to this office for inservice that pertains to STS or STSE type courses or modules. However, inservice and workshops that are done for local education agencies may and many times do include activities that support STS or STSE efforts.

Documentation--curriculum/instructional materials, etc.:

Activities are pulled from existing materials that are referenced in the STS Reporter from Penn State University, and may include activities from Project WILD, Project Learning Tree, AAAS, National Wildlife Federation, NSTA Energy-Environment Source-book, U. S. Department of Energy, etc.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Kentucky:

Mike Howard
Fayette County Schools
701 East Main Street
Lexington, KY 40502

Ken Rosenbaum
Jefferson County Schools
4409 Preston Highway
Louisville, KY 40213

John Stratton
Jefferson County Schools
4409 Preston Highway
Louisville, KY 40213

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Dr. V. Daniel Ochs
Associate Dean
College of Education
University of Louisville
Louisville, KY 40208

Dr. J. Truman Stevens
University of Kentucky
College of Education
207A Taylor Building
Lexington, KY 40506-0001

Dr. Glenn Crumb, Director
Center for Science and Math Education
403 College of Education Building
Western Kentucky University
Bowling Green, KY 42101

Dr. Ron Fiel
Science Education
Lappin Hall
Morehead State University
Morehead, KY 40351

Dr. Trudi L. Volk
College of Education
Murray State University
Murray, KY 42071

NOTE: Higher education, local education agencies, and the State Department of education are all doing inservice, workshops, and classroom teaching activities that promote STSE. However, most of what is being done is not advertised or promoted under this terminology. Until a packaged set of materials is available and we have something to put into the hands of teachers as specific examples of STSE, the effort is going to continue to suffer from an identity crisis.

LOUISIANA

Respondent:

James E. Barr
State Science Supervisor
Louisiana Department of Education
P. O. Box 94064
Baton Rouge, Louisiana 70804
(504) 342-3413

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Louisiana Department of Education has no stated policy in this area. In terms of the Science office, there is a good deal of interest and activity. Three pertinent activities are now underway:

- A major revision of curriculum guides in all areas is now is progress, to integrate S/T/S issue activities into all pertinent areas in the curriculum. Objectives are being re-written to include S/T/S issues, stressing interactions among Science, Society, Technology, and Environment.

- A new course and curriculum guide in Environmental Science aimed at the 11th grade (i.e., for students who have completed biology), is now on line.

- Efforts are underway to integrate more marine education into curricula at appropriate junctures.

Curriculum development in Science/Society/Technology/Environment Education:

See above.

In-service for teachers in Science/Society/Technology/Environment Education:

There is specific in-service for the Environmental Science course mentioned above.

In general, S/S/T/E and S/T/S elements are a component of environmental education as it is infused into science programs.

The Louisiana Department of Education also is involved with in-service for National Wildlife Federation's CLASS Project, and with Project WILD and Project Learning Tree, all of which include activities and concepts appropriate to S/S/T/E.

Documentation--curriculum/instructional materials, etc.:

Materials developed for the Environmental Science course mentioned above include a Curriculum Guide and a Resource Guide. Both are in draft form at this point.

Materials developed cooperatively with the Louisiana Department of Natural Resources for energy education are and have been in use for some time; they are pertinent to S/S/T/E thrusts.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Louisiana:

There are a number of individual teachers involved in this area, including some social studies teachers. Many were identified in our in-state activity associated with the NSTA "Search for Excellence."

Also, various nature centers in Louisiana are demonstrating leadership in the S/T/S and S/S/T/E areas.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

MAINE

Respondent:

Thomas Keller
Science Consultant
State Department of Educational and Cultural Services
Station 23
Augusta, Maine 04333
(207) 289-5925

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Maine Department of Educational and Cultural Services has no policy in this area.

Curriculum development in Science/Society/Technology/Environment Education:

This department promotes the integration of science-based societal studies within the science curriculum at each grade level. Environmental issues are certainly appropriate. The social studies consultant and I are planning an S/T/S conference for Autumn 1987.

In-service for teachers in Science/Society/Technology/Environment Education:

The Division of Curriculum frequently does inservice workshops on curriculum development. The area noted above is one of the topics covered.

Documentation--curriculum/instructional materials, etc.:

The Maine Department of Education assists in the development of curriculum, but does not develop curriculum.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Maine:

Edward Steenstra, Coordinator
Project Create
University of Maine at Machias
9 O'Brien Avenue
Machias, ME 04654

Tish Tanski, Executive Director
Maine Science and Technology Board
One Memorial Circle
Augusta, ME 04330

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Edward Steenstra, Coordinator
Project Create
University of Maine at Machias
9 O'Brien Avenue
Machias, ME 04654

NOTE:

S/T/S is just starting to catch on in Maine. I am new to this position; there may be more happening than I am aware of.

MARYLAND

Respondents:

Gary Heath
Environmental Education Specialist
Maryland State Department of Education
200 West Baltimore Street
Baltimore, Maryland 21201
(301) 659-2312

Anita J. Stockton
Specialist in Science
Maryland State Department of Education
200 West Baltimore Street
Baltimore, Maryland 21201
(301) 659-2319

Policy of the Department concerning Science/Society/Technology/Environment Education:

Science/Technology/Society Education is a formal part of Environmental Education in Maryland, and an integral part of the Environmental Education initiative. An S/T/S conference was held in February 1986. Follow-up grants were awarded to facilitate curriculum development and implementation on S/T/S topics.

Curriculum development in Science/Society/Technology/Environment Education:

Two state framework documents include S/T/S--Environmental Education: A Maryland Approach and Science: A Maryland Curricular Framework.

The Decision-Making/Chesapeake Bay materials, a curriculum developed by the Maryland State Department of Education, were revised in January 1985; all school systems in Maryland are receiving two-day in-service for science and social studies teachers in their high schools. Slide-tape and video tape and maps are provided, along with the curriculum materials.

Several additional projects with strong S/T/S focus are funded at the local level through State Environmental Education funds.

In-service for teachers in Science/Society/Technology/Environment Education:

See above.

Documentation--curriculum/instructional materials, etc.:

See above.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Maryland:

Stephanie Scales, Science Supervisor
Hebrew Academy of Washington
2010 Linden Avenue
Silver Spring, MD 20910

James Haught, Science Supervisor
Washington County Public Schools
823 Commonwealth Avenue
Hagerstown, MD 21740

Bob McNeish
Baltimore County Public Schools
6901 Charles Street
Towson, MD 21204

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

NOTE:

Social studies will be expanding programs next year.

MASSACHUSETTS

Respondent:

James H. Case
Associate Superintendent
Massachusetts Department of Education
1385 Hancock Street
Quincy, Massachusetts 02140

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Massachusetts Department of Education has no policy in this regard.

Curriculum development in Science/Society/Technology/Environment Education:

There is none. In almost all areas, Massachusetts leaves curricular decisions and curriculum development up to local school districts.

In-service for teachers in Science/Society/Technology/Environment Education:

Among Commonwealth Inservice Institute programs are:

Bedford -- Doing Science, 50-hour program for elementary teachers (FY 1986)

Bourne -- Training for Improvement in Science Teaching., 18-hour program for elementary teachers (FY 1986)

Ipswich -- Ipswich Environmental Education K-8, 52-hour program (FY 1986)

Ludlow -- Developing Science Discovery Boxes, 10-hour program for elementary teachers (FY 1986)

Natick -- Energy in Action: Science Inservice, 15-hour program for elementary teachers (FY 1986)

Newburyport--Rejuvenating the Science Program, 36-hour program for elementary teachers, emphasis on using the outdoors (FY 1986)

Pittsfield --Elementary Science Program, 14-hour program (FY 1986)

Tantasqua -- Developing a Science Curriculum K-6, 36-hour program for elementary teachers (FY 1986)

Medford -- Using Computers in Science Classroom (laboratory simulations), 20-hour program for high school teachers (FY 1986)

Westwood -- Implementing Microcomputer Labs in the Science Curriculum, 25-hour program for secondary teachers (FY 1986)

Lynnfield -- Teaching Science K-5, 30-hour program (FY 1987)

Amesbury -- Natural Science Using the Schoolyard Site, 33-hour program for elementary and middle school teachers (FY 1987)

Central Berkshire Rural School District -- Practical Science Experiments for the Elementary Teacher, 42-hour program (FY 1987)

Halifax -- Introduction to Outdoor Education, 14-hour program for elementary teachers (FY 1987)

Lunenburg -- Developing Elementary Science Activities. 30-hour program (FY 1987)

School Union #28 (Shutesbury) -- Water Science Study, 42-hour program for elementary teachers (FY 1987)

Newburyport--"Voyage of the Mimi" Applications in Middle School, 30-hour program (FY 1987)

Wareham -- Teaching Science in the Classroom K-8, 28-hour program (FY 1987)

Chelsea -- Teaching the Elementary Teacher Science, 50-hour program (FY 1987)

Everett -- Training the Teacher in Science, 50-hour program (FY 1987)

Malden -- Teaching the Teacher Science, 49-hour program (FY 1987)

Medford -- Improving Elementary Science Instruction, 48-hour program (FY 1987)

Melrose -- Teaching Science Grades 4-6, 52-hour program (FY 1987)

Somerville-- Mystic Valley Elementary Science, 50-hour program (FY 1987)

Documentation--curriculum/instructional materials, etc.:

None.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Massachusetts:

We do not collect this information.

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

For inservice, see list (above). I know of no pre-service programs specifically focused on SSTE, but one individual with shared general concerns is:

Richard Clark, Director
M/E/STEP
School of Education
University of Massachusetts
Amherst, MA 01003

MINNESOTA

Respondent:

John C. Miller
Environmental Education Specialist
Minnesota Department of Education
644 Capitol Square Building
550 Cedar Street
St. Paul, Minnesota 55101
(612) 296-4069

Policy of the Department concerning Science/Society/Technology/Environment Education:

"Environment" is considered a separate part of our agency's curriculum/technical service effort. It may be incorporated into science/society/technology when appropriate, but is generally not a part of the formal package.

"Environment" is not required at the secondary level at the present time. Guidelines for the Elementary Rule, 35.1150 Required Offerings for Elementary Schools, adopted March 11, 1986 by the Minnesota State Board of Education, specify as required curriculum offerings in the elementary schools:

> "Environmental education, including: natural context; social context; valuing context; and action context," and
>
> "Media and technology, including: equipment familiarity and use; materials retrieval, selection, and use; media production; and viewing skills."

Curriculum development in Science/Society/Technology/Environment Education:

Limited resources dictate limited activity in this area at this time.

In-service for teachers in Science/Society/Technology/Environment Education:

This is of moderate to high priority within selected curricular programs in our agency. Dollars tend to dictate the extent of our inservice activity in all areas. The "hot" areas presently involve only Technology...

Documentation--curriculum/instructional materials, etc.:

Materials available upon request include:

Project Learning Tree - K-12 informational brochure;
Project WILD - K-12 informational brochure;
Learning by Design - K-12 informational brochure;
Our Great Lakes Connection - K-9 informational brochure;
Environmental Value Action Cards - Elementary;
Water...A Resource (Secondary 35mm slide, 7-day loan-out period);
Water Resources - Secondary Teachers Guide;
Water Resources - Secondary Student Manual;
Recycling in the Schools Week Packet - K-12;
Energy Activities for Junior High Science;
Energy Activities for Junior High Social Studies;
Portfolio of Energy Ideas - Secondary Science;
Portfolio of Energy Ideas - Secondary Social Studies;
Minnesota Energy Activities for Elementary Students;
1986 Wildlife Poster #1 (Eagle) K-12;
1986 Wildlife Poster #2 (Animals) K-12;
Environmental Education, Some Essential Learner Outcomes (SELO) K-12;
Energy Education Bibliography, 1980, K-12;
Energy Primer for Minnesota Teachers, K-12;
Energy Roots Magazine, K-12;
Energy Facts 1984 Pamphlet, K-12;
Environmental Education and Outdoor Education Activities Packet, Secondary;
Concepts in Energy Education, K-12;
Energy Literacy Statement, K-12; and
Minnesota Beautiful informational brochure.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Minnesota:

Erleen Lewis Braton
Elementary Teacher
Rogers Elementary School
12521 Main Street
Rogers, MN 55374

Vernon Stevens
Elementary Principal
Dawson Elementary School
Box S
Dawson, MN 56232

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Dr. Arlyn Kline
Professor of Education
Department of Education
Armstrong Hall
Mankato State University
Mankato, MN 56001

Dr. Ray Nelson
Professor of Education
Department of Education
Room 303 Education Arts Building
Bemidji State University
Bemidji, MN 56601

Robert Holtz
Professor of Science Education
Concordia College
Hamline and Marshall
St. Paul, MN 55104

David Kramer
Professor of Science Education
St. Cloud State University
1st Avenue South and 7th Street
St. Cloud, MN 56301

Lee Grim
Science Education
Rainey River Community College
International Falls, MN 56649

Nancy Harger, Director
Regional Science Center
Box 336
Moorhead State University
Moorhead, MN 56560

Tom Feiro
Natural Resource Manager
Northwest Agricultural
Extension Station
Department of Natural Resources
University of Minnesota
Crookston, MN 56716

MONTANA

Respondent:

Robert Briggs
State Science Specialist
Montana Office of Public Instruction
State Capitol Building, Room 106
Helena, Montana 59620
(406) 444-4439

Policy of the Department concerning Science/Society/Technology/Environment Education:

Montana does not have a state policy on STSE education, but does promote and encourage it through this office, which is responsible for science, energy, and environmental education. Flyers are sent, workshops and training are provided on a frequent but irregular basis.

Curriculum development in Science/Society/Technology/Environment Education:

STSE is not treated as a separate subject, but rather as a necessary part of good curriculum development.

In-service for teachers in Science/Society/Technology/Environment Education:

Not applicable; in-service is not provided for this area specifically.

Documentation--curriculum/instructional materials, etc.:

None.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Montana:

Janet Thomson
District Curriculum Coordinator
Great Falls Public Schools
Box 2428
Great Falls, MT 59403

Doris Simonis
Professor of Education
Department of Education
University of Montana
Missoula, MT 59812

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

NEBRASKA

Respondent:

Jim Woodland
Consultant, Science and Mathematics
Nebraska Department of Education
Box 94987
301 Centennial Mall South
Lincoln, Nebraska 68509

Policy of the Department concerning Science/Society/Technology/Environment Education:

Nebraska encourages teachers to incorporate instruction dealing with SSTE in their classrooms. Environment is implicitly part of the package.

Curriculum development in Science/Society/Technology/Environment Education:

Technology, Ecology, Kids (T. E. K.) Camp is held during the summer for outstanding students from 80 schools throughout the state. During T. E. K. Camp, students learn how technology interacts with their environment by studying topics such as robotics, micro-based laboratory experiences, environmental biology, and environmental-related art experiences.

In-service for teachers in Science/Society/Technology/Environment Education:

None

Documentation--curriculum/instructional materials, etc.:

Information concerning T. E. K. Camp is provided for schools participating.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Nebraska:

John Rogers, Director
Science Center
Educational Service Unit #3
4224 South 133rd Street
Omaha, NE 68137

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. Ron Bonnstetter
Assistant Professor
University of Nebraska-Lincoln
211 A Henzlik Hall
Lincoln, NE 68588

NEVADA

Respondent:

Ron Gutzman
Mathematics Consultant
Nevada Department of Education
Capitol Complex
400 West King Street
Carson City, Nevada 89701
(702) 885-3136

Policy of the Department concerning Science/Society/Technology/Environment Education:

The department produces an elementary and secondary course of study. Each of these address science content and process to be taught in the schools. Environment is formally part of the course of study.

Curriculum development in Science/Society/Technology/Environment Education:

The department does not develop curriculum.

In-service for teachers in Science/Society/Technology/Environment Education:

The department does sponsor inservice training opportunities for Nevada teachers in the areas of science, mathematics, computer literacy, and computer software.

Documentation--curriculum/instructional materials, etc.:

None listed.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Nevada:

Gene Butler
Clark County School District
600 North Ninth Street
Las Vegas, NV 89101

Bob Lawson, Program Assistant
Washoe County School District
425 East Ninth Street
Reno, NV 89502

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. John Trent, Professor
University of Nevada, Reno
College of Education
Reno, NV 89507

NEW YORK

Respondent:

* Carolyn S. Graham, Associate
Bureau of Science Education
State Education Department
Albany, New York 12234

* Also responding for Douglas Reynolds, John Higham, and Barry Jamason.

Policy of the Department concerning Science/Society/Technology/Environment Education:

Science/Technology/Society is or will be included in the New York State science syllabi at all grade levels from K-12. While the term "Environment" does not appear in the name we use for this area, environment is very definitely an integral part of it. The interactions of science, technology, and society almost always have an environmental component.

Curriculum development in Science/Society/Technology/Environment Education:

The New York State Elementary Science Syllabus has as its major goal to help students become effective problem solvers. An attitudes component on valuing the technological is a part of the syllabus.

The Middle/Junior High Syllabus includes Block J: Science, Technology, and Society, a module which is intended to be infused across the life, physical, and earth sciences taught in the other blocks (A - I) of the syllabus.

A one-year science and technology science syllabus for students in grades 10-12 is under development. It will focus on science as a means of investigating and solving real S/T/S problems which occur in students' lives.

As Regents biology, earth science, chemistry, and physics, and general biology, chemistry, and physics syllabi are revised, specific S/T/S components will be included.

In-service for teachers in Science/Society/Technology/Environment Education:

As these syllabi are implemented in the State, inservice for teachers is provided to the extent possible.

Documentation--curriculum/instructional materials, etc.:

Elementary Science Syllabus
Elementary Science Supplement to the Syllabus, Level I
(Levels II and III are not yet available)
Science, Technology, and Society, Block J of the Science Syllabus for Middle and Junior High Schools
Science and Technology (not yet available)

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in New York State:

Michael Gosiewski, Chairperson
Science Department
Marlboro High School
Cross Platteville Road
Marlboro, NY 12542

Arthur Lebofsky, Chairperson
Science Department
Clarkstown Central School
30 Parrot Road
West Nyack, NY 10994

Irma S. Jarcho
The New Lincoln School
210 East 77th Street
New York, NY 10021

Marie Marshall, Science Chairperson
Hicksville Junior High School
Jerusalem Avenue
Hicksville, NY 11801

Vincent Cusimano
Staten Island Continuum of Education
Room 704
130 Stuyvesant Place
Staten Island, NY 10301

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Professor William Doody
*Center for Science, Mathematics and Technology Education
State University College
Potsdam, NY 13676-2299

* The Center has recently received an NSF grant for developing programs to prepare middle school science teachers. It is expected that this program will have a strong STS component.

There are three national programs of particular interest in this area.

Science through Science, Technology and Society
Rustum Roy, Project Director
The Pennsylvania State University
202 Materials Research Laboratory
University Park, PA 16802
(814) 865-9951

Building Support Networks for S/T/S
Jan Pearson
Social Science Education Consortium
Educational Resources Center
885 Broadway
Boulder, CO 80302

You, Me, and Technology
Agency for Instructional Technology
Box A
Bloomington, IN 47402-0120
(800) 457-4509

NOTE:

Other individuals in New York State with collegiate programs in STS include:

E. Joseph Piel
Thomas Liao
Department of Technology and Society
State University of New York
Stony Brook, NY 11794-2250

NORTH CAROLINA

Respondent:

Clinton L. Brown
Assistant Director
Division of Science
North Carolina Department of Public Instruction
Raleigh, North Carolina 27603-1712
(919) 733-3694

Policy of the Department concerning Science/Society/Technology/Environment Education:

STS issues, including environmental concerns, are viewed as an important part of the North Carolina curriculum, grades K-12. We encourage STS to be integrated into the curriculum in science. Social studies takes the same approach, as we work on STS issues jointly. We are not totally against separate STS courses, but do not encourage this approach. This, of course, may change.

Curriculum development in Science/Society/Technology/Environment Education:

In 1985, North Carolina completed a new competency-based curriculum, for inclusion in school year 1986-87. The science component specifically addresses STS issues, making them a component of the state curriculum and the mandated Standard Course of Study. The same is true of the social studies component.

In-service for teachers in Science/Society/Technology/Environment Education:

This area is not well developed yet, as we are only now finishing up efforts to assist local school systems in understanding the new curriculum. Staff development for the State Agency science and social studies divisions (22 professionals total) relative to STS is scheduled to begin in late Spring or early Summer 1987. More detailed teacher in-service will follow.

Documentation--curriculum/instructional materials, etc.:

The Teacher Handbook: North Carolina Competency-Based Curriculum. Science K-12. Social Studies K-12.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in North Carolina:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

NORTH DAKOTA

Respondent:

Charles DeRemer
Curriculum Coordinator
North Dakota Department of Education
Capitol Building, 9th Floor
Bismarck, North Dakota 58505

Policy of the Department concerning Science/Society/Technology/Environment Education:

No response.

Curriculum development in Science/Society/Technology/Environment Education:

Development of the Elementary Science Curriculum to be completed by June 1, 1987.

In-service for teachers in Science/Society/Technology/Environment Education:

Inservice for the Elementary Science Curriculum will take place during the summer of 1987.

Documentation--curriculum/instructional materials, etc.:

None listed.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in North Dakota:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

OHIO

Respondent:

John Hug, Consultant
Science Education and Environmental Education
Ohio Department of Education
65 S. Front Street, Room 1005
Columbus, Ohio 43266-0308
(614) 466-2211

Policy of the department concerning Science/Society/Technology/Environment Education:

There is no written policy in this regard. As a consultant to 615 school districts concerning the improvement of science education, I personally encourage the inclusion of the science/technology/society/environment in the revised science curriculum at all grade levels.

Curriculum development in Science/Society/Technology/Environment Education:

In a publication due out in the summer of 1987, there will be strong encouragement for school districts to modify K-12 curricula to include this idea.

In-service for teachers in Science/Society/Technology/Environment Education:

In the Fall of 1987, several regional workshops will be conducted. A portion of that time (five hours) will be devoted to the encouragement of the S/T/S idea.

Documentation--curriculum/instructional materials, etc.:

None listed.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Ohio:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

NOTE:

We are finding increasing interest in moving in this direction, but have no knowledge that exemplary programs are under way yet.

OKLAHOMA

Respondent:

Doris Grigsby
Science Specialist
Oklahoma Department of Education
2500 N. Lincoln Boulevard
Oklahoma City, OK 73105
(405) 521-3361

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Oklahoma Department of Education has no policy in this regard. In Suggested Learner Outcomes (see below), S, S, and T are overt, while E is covert (grades 9-12).

Curriculum development in Science/Society/Technology/Environment Education:

The department has developed a publication, Outdoor Education: Issues and Investigations, for grades 5-8.

In-service for teachers in Science/Society/Technology/Environment Education:

Outdoor Education, K-6 and 7-12.

Documentation--curriculum/instructional materials, etc.:

See above (under curriculum development).

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Oklahoma:

Dr. Larry McKinney, Principal
Okemah Middle School
Okemah, OK 74859

Sara LaBorde
Education Specialist
Oklahoma Wildlife Department
P. O. Box 53465
Oklahoma City, OK 73152

Dr. John Roller, Science Supervisor
Tulsa Public Schools
Education Center
P. O. Box 470208
Tulsa, OK 74147-0208

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. Ted Mills
College of Education
Gunderson Hall
Oklahoma State University
Stillwater, OK 74078

OREGON

Respondent:

Raymond E. Thiess
Specialist, Science Education
Oregon Department of Education
700 Pringle Parkway SE
Salem, Oregon 97310
(503) 373-7898

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Oregon Department of Education has no policy.

Curriculum development in Science/Society/Technology/Environment Education:

Insofar as possible, this is incorporated in science curriculum efforts. Vocational Education is working on the Principles of Technology program for grades K-12. The Department encourages local education agencies to consider this program as a third or fourth year of science credit.

In-service for teachers in Science/Society/Technology/Environment Education:

There is no specific in-service for S/T/S education at this time. There have been several Principles of Technology workshops/ meetings, etc., over the past several years.

Documentation--curriculum/instructional materials, etc.:

None exist.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Oregon:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

PENNSYLVANIA

Respondent:

John J. McDermott
Senior Adviser, Science
Pennsylvania Department of Education
333 Market Street
Harrisburg, Pennsylvania 17126-0333
(717) 783-6598

Policy of the Department concerning Science/Society/Technology/Environment Education:

As a state education agency, the Pennsylvania Department of Education stresses STS. Environmental education is required as part of our curriculum regulations.

Curriculum development in Science/Society/Technology/Environment Education:

We produce curriculum guides in both areas. We also cooperate with national organizations (e.g., Project Learning Tree).

In-service for teachers in Science/Society/Technology/Environment Education:

Statewide.

Documentation--curriculum/instructional materials, etc.:

Pennsylvania Department of Education materials are included in the ERIC system.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Pennsylvania:

Dr. Rustum Roy, Director
Science through Science,
Technology and Society
The Pennsylvania State
University
University Park, PA 16801

RHODE ISLAND

Respondent:

James L. Harrington
Rhode Island Department of Education
Technical Assistance
22 Hayes Street
Providence, Rhode Island 02908
(401) 277-2821

Policy of the Department concerning Science/Society/Technology/Environment Education:

The State of Rhode Island has in place a Basic Education Program that deals with this issue. Environmental education will be taught in the schools of the state.

Curriculum development in Science/Society/Technology/Environment Education:

It is encouraged and supported with state dollars. We are considering developing a state-wide environmental curriculum at this time.

In-service for teachers in Science/Society/Technology/Environment Education:

Teacher in-service is provided in all disciplinary areas with state monies.

Documentation--curriculum/instructional materials, etc.:

We have recently developed a K-12 health curriculum.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Rhode Island:

None listed.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

SOUTH DAKOTA

Respondent:

Jim Hauck
Science Director
South Dakota Division of Education
700 Governors Drive
Pierre, South Dakota 57532

Policy of the Department concerning Science/Society/Technology/Environment Education:

South Dakota has no policy regarding the teaching of S/S/T/E, nor does it have an Environmental Education Director. The science director introduces teachers to these areas through regional and other in-service. Local school districts determine the curriculum; environmental education is incorporated into the science curriculum by local schools.

Curriculum development in Science/Society/Technology/Environment Education:

Schools are encouraged to include these areas in their science curricula.

In-service for teachers in Science/Society/Technology/Environment Education:

The science director incorporates these areas in presentations at in-services.

Documentation--curriculum/instructional materials, etc.:

No response.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in South Dakota:

No listing available.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Education Department
Northern State College
South Jay Street
Aberdeen, SD 57401

Dr. H. Guerke
Chemistry Teacher
South Dakota State University
Brookings, SD 57006

TENNESSEE

Respondent:

Padgett Kelly
Director, Conservation Education
Tennessee Department of Education
1210 Foster Avenue
Nashville, Tennessee 37210
(615) 741-5774

Policy of the Department concerning Science/Society/Technology/Environment Education:

We conduct workshops across the state using Project WILD, Project Learning Tree, and The CLASS Project. Environmental education is not mandated. We have trained 4500 teachers in the past three years.

Curriculum development in Science/Society/Technology/Environment Education:

We have matched the materials mentioned above with the state-mandated frameworks.

In-service for teachers in Science/Society/Technology/Environment Education:

We conduct 30-45 workshops per year.

Documentation--curriculum/instructional materials, etc.:

No state or local documentation mentioned.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Tennessee:

Doug Ratledge
Greene County Schools
Greeneville, TN 37743

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. C. B. Coburn, Professor
Tennessee Technological
University
Cookeville, TN 38501

TEXAS

Respondent:

Barbara ten Brink
Education Specialist, Science
Texas Education Agency
1701 North Congress
Austin, Texas 78701
(512) 463-9559

Policy of the Department concerning Science/Society/Technology/Environment Education:

Texas has a state-adopted course, 19 TAC Chapter 75.64 (m) Environmental Science. All science courses must devote 40 percent of the instructional time to laboratory/field activities--19 TAC Chapter 75.142.

Curriculum development in Science/Society/Technology/Environment Education:

Science Framework, Kindergarten through Grade 12, is scheduled for printing and distribution in January 1987.

In-service for teachers in Science/Society/Technology/Environment Education:

Upon request, in-service is delivered to local school districts, Educational Service Centers (of which there are 20), colleges and universities, and state conferences.

Documentation--curriculum/instructional materials, etc.:

As noted above, our Science Framework will be published in January 1987.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Texas:

There are 1100 school districts in Texas. They may or may not be teaching Environmental Science.

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

We have 1100 school districts and 67 colleges of education in Texas.

NOTE:

The National Science Teachers Association Search for Excellence targeted Environmental Education and Science/Technology/Society. The Texas Education Agency worked to identify exemplary programs in our state in these areas.

UTAH

Respondent:

R. LaMar Allred
State Specialist, Science Education
Utah State Office of Education
250 East 500 South
Salt Lake City, Utah 84111
(801) 533-5965

Policy of the Department concerning Science/Society/Technology/Environment Education:

There is no "policy" on STS except that we have developed two courses for grades 9-12 that can be taken to fulfill the high school graduation requirements. These are entitled Biological-Earth Science and Physical-Earth Science. The titles do not reflect the philosophical approach taken, which is STS.

Curriculum development in Science/Society/Technology/Environment Education:

This office sponsored a writing conference in June 1986 which produced two publications--Learning Activities for Biological-Earth Science and Learning Activities for Physical-Earth Science.

In-service for teachers in Science/Society/Technology/Environment Education:

A one-week workshop was held in August 1986 to introduce selected teacher-leaders to the publications noted above and to orient them to the STS philosophy and goals. Approximately 60 teachers participated, with 15 teacher-leaders conducting the training.

In January 1987, the Utah Science Teachers Association Mid-Winter Conference focuses on STS, with Paul Hurd as keynoter.

Documentation--curriculum/instructional materials, etc.:

Supplies of the publications noted above have been exhausted. We anticipate revision during Summer 1987.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Utah:

Karlene Bauer
Jordan Middle School
9855 Sunflower Lane
Sandy, UT 84070

Dwight G. Brown
Bountiful High School
791 East 550 North
Bountiful, UT 84010

Carl L. Bruce
Weber High School
3073 North 1225 East
North Ogden, UT 84404

Cory Green
Canyon View Junior High School
639 North University #12
Provo, UT 84601

Rodney D. Griffin
Alta High School
1559 West 8295 South
West Jordan, UT 84084

Reginald Hassard
Payson Junior High School
352 South 800 West
Payson, UT 84651

Gregory P. Lewis
Central Middle School
1948 North 600 East
North Ogden, UT 84404

Martin Monson
Orem High School
330 South 400 East
American Fork, UT 84003

Brett D. Moulding
Roy High School
2558 North 2450 East
Layton, UT 84041

Virginia W. Ord
Millcreek Junior High School
980 E. Arlington Way
Bountiful, UT 84010

Douglas J. Pusey
Canyon View Junior High School
532 East 700 South
Orem, UT 84058

Gary B. Turner
Wasatch High School
340 North 200 West
Heber City, UT 84032

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

Dr. Richard Tolman
Associate Professor
Zoology Department
Brigham Young University
Provo, UT 84602

NOTE:

We are "pushing" the implementation of the two courses previously noted into the secondary school curriculum. These efforts are quite diverse, and too numerous to discuss.

VERMONT

Respondent:

George Tanner
Science Consultant
Vermont Department of Education
State Office Building
Montpelier, Vermont 05602
(802) 828-3111

Policy of the Department concerning Science/Society/Technology/Environment Education:

Societal issues must be addressed in science curricula. Environmental education is recommended in grades K-8.

Curriculum development in Science/Society/Technology/Environment Education:

Such development is encouraged by regulation, which requires scope and sequence. It is supported by limited staff at the state level.

In-service for teachers in Science/Society/Technology/Environment Education:

This is accomplished through Title II higher education grants, in addition to the activities of consultants.

Documentation--curriculum/instructional materials, etc.:

Framework for the Development of a Science Scope and Sequence.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Vermont:

Bill Romond
Colchester High School
Colchester, VT 05446

Larry Richardson
Brattleboro High School
Brattleboro, VT 05301

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

None listed.

VIRGINIA

Respondent:

James C. Firebaugh
Supervisor of Science
Virginia Department of Education
Box 6Q
Richmond, Virginia 23216
(804) 225-2651

Policy of the Department concerning Science/Society/Technology/Environment Education:

The Standards of Learning Objectives (SOL) for science, adopted by the Virginia Department of Education in 1983, incorporate SSTE within the overall program goals and objectives as well as within each grade level or specific area of science. SOL is the framework which drives all science instruction, K-12, in Virginia.

Curriculum development in Science/Society/Technology/Environment Education:

There will be an institute for the development of curriculum materials for Applied Physical Science in July, 1987. These materials, which incorporate SSTE, will be available during the fall of 1987.

In-service for teachers in Science/Society/Technology/Environment Education:

None listed.

Documentation--curriculum/instructional materials, etc.:

None listed.

Key contacts for local programs dealing with Science/Society/Technology/ Environment Education in Virginia:

There is no catalog available of the specific programs being conducted in the state as they apply directly to SSTE.

Key contacts in the teacher education area for Science/Society/Technology/ Environment Education:

George Willcox, Supervisor of Technology Education
Box 6Q
Richmond, VA 23216

Timothy Cotman, Supervisor of Science
Box 6Q
Richmond, VA 23216

Dr. Franklin Jones
Radford University
Radford, VA 24141

WASHINGTON

Respondents:

Tony Angell
State Supervisor, Environmental Education
Office of the Superintendent of Public Instruction
17011 Meridian Avenue North
Seattle, Washington 98155
(206) 542-7671

David Kennedy
Science Supervisor
Office of the Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504
(206) 753-6757

Policy of the Department concerning Science/Society/Technology/Environment Education:

There is no clear policy. However, opportunity to participate in cooperative projects exists. The department is currently cooperating with the Social Science Education Consortium (Boulder, CO) in its S/T/S project. Also, legislation is currently being prepared (resolution and bill) that will more formally blend environmental education into a student's educational program, K-12. An Environmental Education Task Force, made up of resource agency representatives, environmental interest groups, business and industry, and chaired by the State Office of Public Instruction, is assisting in the formulation and passage of this legislation.

Curriculum development in Science/Society/Technology/Environment Education:

Curriculum is not generally developed or promulgated by the Washington Superintendent of Public Instruction. The Environmental Education unit has developed (written), revised and maintained in print the following curriculum materials that have direct application to SSTE:

Energy, Food and You -- An interdisciplinary K-12 curriculum program dealing with the nature and importance of energy within our society, with particular focus on the food system.

Clean Water, Streams and Fish -- An interdisciplinary, with science and social studies emphasis, curriculum focusing on the local watershed and quality of its water resources. Sections of the curriculum are aimed at introducing students

to the nature of salmon resources, the habitat conditions necessary for its survival, problems of associated water quality, and their solutions.

Away with Waste -- A K-12 curriculum that examines the nature of waste in society, its costs (environmental/economic), and the strategies for reuse and recycling. Interdisciplinary; this program, developed with a grant from the Department of Ecology, is now being directed and operated through the State Department of Ecology.

Coastal Zone Studies (for Middle School) -- Curriculum examining the historical aspects (geologic, biological, and human) of Puget Sound, with specific activities involving students in the understanding of the five major marine life zones operating in these inland waters. Special consideration of the economic enterprises dependent on the quality of these ecologic systems. Developed (written, revised, and in-serviced) by the Environmental Education Office.

Encounter with the Northwest Environment: Natural and Urban -- For grades 6-12. Examination of the major natural systems comprising the Pacific Northwest, from open ocean eastward across the region to the Columbia Plateau grasslands. Each environment is examined in its pristine condition and compared with the same environment as it is intensively utilized by humankind for its resources. A separate section examines the component parts of the urban environment of Seattle, and how they function on behalf of the citizens of the region. Written and in-serviced by the Environmental Education Office.

SLEUTH: Household Hazardous Waste -- Written and developed by the Environmental Education Office with a grant from the Municipality of Metropolitan Seattle, this intermediate and secondary school level program explores the problems of household wastes, their threats to health and environment. Attention is given to the special handling needed, as well as to disposal methods that do not pose a threat (to the best of our knowledge) to society. This program is in-serviced by METRO and the Toxics Coalition.

The following films have direct relevance to SSTE:

Last Farmer at the Market -- This film, developed cooperatively by the Environmental Education Office and KING Broadcasting, examines the economic and social effect of displacement of local agriculture. Questions of open space, taxing rate, changes of local ecosystems, and community atmosphere are all part of the film's focus. Used by Junior High and High Schools.

Northwest Legacy -- This film was written and developed by the Northwest Office of Environmental Education. It provides the visual complement to the Teacher Guide to Encounter with the Northwest Environment: Natural and Urban.

Fragile Resource -- This film, developed in cooperation with METRO, examines the condition of the regional water supplies with a special focus on the importance of these supplies on the local environment and the economy.

Other programs supported by the Office of Environmental Education, Northwest Section, include Project Learning Tree and Project WILD.

In-service for teachers in Science/Society/Technology/Environment Education:

Staff development is becoming a major issue in the State of Washington. If an S/T/S thrust becomes available, the Office of Public Instruction anticipates supporting it. Currently, in-service opportunities are available in association with several of the curricular materials identified above.

Documentation--curriculum/instructional materials, etc.:

To date, there are no curriculum materials directly developed for S/T/S or S/S/T/E. As noted previously, many of the State of Washington's existing materials, described above, have applications in this area.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in the State of Washington:

Charles Hardy
Curriculum Director
Highline School District
P. O. Box 66100
Seattle, WA 98166

Pat Ehrman, Teacher
Gayle Marquett, Teacher
Davis Senior High School
212 South 6th Avenue
Yakima, WA 98902

Barbara Schultz, Teacher
Shorewood High School
17300 Fremont Avenue North
Seattle, WA 98133

Cal Schultz, Teacher
Bill Belnap, Teacher
Bothell Senior High School
18125-92nd Avenue, N.E.
Bothell, WA 98011

Roderick McCleod, Teacher
Edmonds Senior High School
7600-212th Street, S.W.
Edmonds, WA 90820

Greg McGowan, Teacher
Garfield Senior High School
400-23rd Avenue
Seattle, WA 98122

Maura Broderick, Teacher
Fairview Junior High School
Box 8
Silverdale, WA 98383

Mike Jones, Teacher
2545 N. E. 200th
Seattle, WA 98155

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

NOTE:

The State of Washington has not made much progress to date, in terms of new thrusts in S/T/S and/or S/T/S/E. However, much of the activity of the past several years is applicable.

WISCONSIN

Respondents:

Kenneth Dowling
Science Education Superivsor
Wisconsin Department of Public Instruction
P. O. Box 7841
Madison, Wisconsin 53707
(608) 266-3319

David Engleson
Environmental Education Supervisor
Wisconsin Department of Public Instruction
P. O. Box 7841
Madison, Wisconsin 53707
(608) 266-9266

Policy of the Department concerning Science/Society/Technology/Environment Education:

Two publications, A Guide to Curriculum Planning in Environmental Education and A Guide to Curriculum Planning in Science, promote a study of science/society/technology/environment in the curriculum. The latter publication discusses the relationship between environmental and science education.

Curriculum development in Science/Society/Technology/Environment Education:

Note the two curriculum guides mentioned above. The science guide identifies four curricular components: problem-solving; science knowledge; nature of science; and science, technology, and society.

A school district standard which becomes effective with the 1988-89 school year requires development of a written, sequential curriculum plan in both science and environmental education.

Cooperative Educational Service Agency 5, Portage, WI, has developed a generic "scope and sequence" based on the science guide and is in the process of developing a similar product based on the environmental education guide. School districts may utilize them in their own curriculum development efforts.

The Muskego-Norway school district has a special EESA grant to develop a K-12 science curriculum based on the science guide.

In-service for teachers in Science/Society/Technology/Environment Education:

Numerous workshops on both the science and environmental education planning guides have been conducted, and many more will be conducted. In each, the importance of science/society/technology/environment has been stressed.

Documentation--curriculum/instructional materials, etc.:

Both the Science and the Environmental Education guides mentioned above are available through the ERIC system.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Wisconsin:

John Harkness
Science Consultant
Wausau West High School
1200 W. Wausau Avenue
Wausau, WI 54401

Peter Behnke, Principal
Niagara Elementary School
700 Jefferson Street
Niagara, WI 54151

Charles Boerner, Principal
Bay Lane Middle School
S75 W16399 Hilltop Drive
Box 902
Muskego, WI 53150

Jim Hein
Madison Memorial High School
201 South Gammon Road
Madison, WI 53705

Ron VanderVelden
Kaukauna Senior High School
101 Oak Street
Kaukauna, WI 54130

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

Tom VanKouvering, Director
Science Education Service Center
University of Wisconsin
Green Bay, WI 54301

Rudy Koch, Director
Science Education Service Center
University of Wisconsin
LaCrosse, WI 54601

Phillip Smith, Director
Science Education Service Center
University of Wisconsin
Milwaukee, WI 53201

Roger Wood, Director
Science, Technology, Society Project
University of Wisconsin
Stevens Point, WI 54481

John Rusch
Science Education Service
Center
University of Wisconsin
Superior, WI 54880

WYOMING

Respondent:

William M. Futrell, Coordinator
Science/Mathematics/Environmental Education
Wyoming State Department of Education
241 Hatheway Building
Cheyenne, Wyoming 82002-0050
(307) 777-6247

Policy of the Department concerning Science/Society/Technology/Environment Education:

The department has no policy in this area.

Curriculum development in Science/Society/Technology/Environment Education:

None.

In-service for teachers in Science/Society/Technology/Environment Education:

Each year at the annual convention of the Wyoming Science Teachers Association, a session is given on STS.

Documentation--curriculum/instructional materials, etc.:

None.

Key contacts for local programs dealing with Science/Society/Technology/Environment Education in Wyoming:

Betty Horsch, Teacher
Kelly Walsh High School
3500 East 12th Street
Casper, WY 82609

Rollie Cox, Teacher
Lander Valley High School
1000 Main Street
Lander, WY 82520

Linda Fleming, Teacher
P. O. Box 59
Baggs, WY 82321-0059

David Masterman
Jackson Hole High School
Jackson Hole, WY 83001

Key contacts in the teacher education area for Science/Society/Technology/Environment Education:

None listed.

APPENDIX: SURVEY FORM AND COVER LETTER

October 28, 1986

SMEAC Information Reference Center
The Ohio State University
1200 Chambers Road, Room 310
Columbus, OH 43212
Telephone: (614) 292-6717

Two projects now being initiated by the ERIC Clearinghouse for Science, Mathematics, and Environmental Education (ERIC/SMEAC) focus on the environmental dimensions of current school-related activity in the Science/Society/Technology (SST) area. One will contain instructional activities for use by teachers in school programs related to Science/Society/Technology/Environment (SSTE). The other will identify and summarize state education agency efforts, and related efforts at local levels, in the same area.

We request your input and advice. From many recipents of this letter, we hope to elicit the levels of response which you have provided in the past. From others, we anticipate securing information on similar levels.

Enclosed is a questionnaire requesting information about what is happening in your state with respect to education dealing with SSTE. It also solicits additional "leads" for us to contact, along with information about existing or planned publications in the area. It will be appreciated if you complete and return it by November 17, 1986. A stamped, addressed envelope is enclosed for your convenience.

It may be that you are not "the right person" within your agency from whom to request this information; our mailing list includes both science eduation and environmental education specialists, but it may be incorrect, incomplete, or both. It will be helpful if you will either forward this request to the "right person" or let us know who that individual might be so that we can do so.

Many thanks for your assistance. Let me know how we may be of assistance to you.

Sincerely,

John F. Disinger
Associate Director of
Environmental Education

JFD:lss
Enclosures

SCIENCE/SOCIETY/TECHNOLOGY/ENVIRONMENT EDUCATION
SURVEY

Respondent _____
Name Title

Address _____

_____

_____
City State Zip

Telephone _____

_____ I am not the appropriate person from whom to secure this information. Please contact:

_____
Name Title

Address _____

_____

_____
City State Zip

Telephone _____

1. Please indicate briefly activities within your agency which deal with, or relate to the development or furtherance of instruction dealing with Science/Society/Technology/Environment. Please indicate, as part of your response, whether or not "Environment" is formally part of the "package," if it is implicity part of the package, or if it is specifically excluded. Consider these areas:

    a. "Policy" of your agency in these regards.

b. Curriculum development, etc., in these regards, as sponsored by, supported by, or encouraged by, your agency.

c. In-service for teachers in these regards, under the guidance of your agency.

2. Please indicate any existing documentation, including curriculum or instructional materials, as supported by, sponsored by, or encouraged by, your agency. If possible, please submit two copies of these materials for probable inclusion in the ERIC system.

3. Please provide brief information concerning local programs (school districts, individual schools, individual teachers, etc.) which are involved in instruction related to SSTE. We will contact those named here for additional information.

Contact Person _____
Name Title

Address _____

_____

_____
City State Zip

Contact Person _____
Name Title

Address _____

_____

_____
City State Zip

Contact Person _____
Name Title

Address _____

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_____
City State Zip

Contact Person _____
Name Title

Address _____

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_____
City State Zip

Contact Person _____
Name Title

Address _____

_____

_____
City State Zip

4. Please indicate teacher education programs (pre-service and/or in-service in your state which deal with SSTE. We will contact those named here for additional information.

Contact Person _____
Name Title

Address _____

_____

_____
City State Zip

Contact Person _____
Name Title

Address _____

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City State Zip

Contact Person _____
Name Title

Address _____

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City State Zip

Contact Person _____
Name Title

Address _____

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City State Zip

Contact Person _____
Name Title

Address _____

_____

_____
City State Zip

5. The questions above may not adequately address all of the pertinent ventures in your state. If such is the case, please provide additional pertinent information.

THANK YOU FOR YOUR HELP

We will provide a review copy of our summary of your input, prior to publication. You will receive copies of the reports developed from the above, as soon as they are available.

PLEASE RETURN YOUR SURVEY FORM BY NOVEMBER 17, 1986.

John F. Disinger
SMEAC Information Reference Center
1200 Chambers Road, Room 310
Columbus, OH 43212
Telephone (614) 292-6717